COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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The Producer as Consumer

IT IS one thing to tell the other fellow how to do it and another thing to do it yourself. The consumer of coal is being told that he should take in his coal now for next month's and next winter's requirements. There is sound reasoning behind the advice, for if he does not buy his coal now or very soon, he may have some real difficulty getting it later when the great majority also will want their coal. The railroads say they cannot haul everybody's coal all at once. But the coal consumer, unless he is more than usually well informed, does not recognize that as a convincing argument, if he knows of it at all; he simply looks upon the warning of the coal man as a sales argument in dull times.

Industry is so slack now that plants are operating in the aggregate less than half capacity, the great steeel industry is down to 35 per cent, the railroads have but little to haul. A typical coal consumer who is using but a small proportion of his normal quantity of coal is either buying that in the spot market in small lots or is using from a storage pile accumulated in more flush times. As for the future, he hesitates to put his money into coal, which, for all that he knows, may be cheaper later and, furthermore, he is taking in so little money now that he hesitates, even if able, to invest in coal or any other raw material, though he know full well he will have use for it later, when his business picks up. In other words, it is hard to sell coal now.

The coal producer is a consumer of a multitude of materials and equipment necessary to the operation of his mines and the turning out of his product. Let him apply to himself the same arguments he puts to his customer before he condemns as shortsighted the man who will not take coal in storage now. The coal man knows, and is secure in the knowledge, that if coal is not produced now, it must be later on. To produce that coal he will require much in the way of supplies and machinery that he has not on hand. Buying that material now is applying some Golden Rule philosophy that will start the demand for more coal.

Don't Drop the Pilot

ASSOCIATIONS of coal operators were first organized for dealing with labor. Some still have their existence for that purpose, but the so-called association idea in the coal industry that has given us the locals we have today grew out of the need for more widespread knowledge of the real facts of the business—those matters that in the distant past were held as trade secrets, as costs, distribution, and sales realizations. Doubtless the greatest incentive to co-operative action and the mutual exchange of statistical data, which reached the height of its development and usefulness in the local associations a year or more ago, came in the Middle West as a measure of protection against the combinations of the large and powerful purchasers of steam coal, particularly in the Chicago market. Coal associations gained in usefulness and spread over most of the fields through the period 1916-1918, encouraged by the Fuel Administration. Men of a particularly high grade and energetic type were called as secretaries to organize and operate the associations, and new ideas and activities were developed.

The formation of the National Coal Association was facilitated if not made possible by the existing locals. As a federation it was originally planned that the secretaries would be the executive body of the larger organization.

Events in the past year and a half, or since the coal strike of 1919, have operated to decrease the opportunities for helpfulness of the local coal operators' associations. The first indictments at Indianapolis and the hardwood lumber case were interpreted by the coal men as indications that reports of prices charged for coal, even though collected in a manner presumably entirely legal and certainly morally beyond question, were not looked upon with favor by the Department of Justice at Washington, and therefore were something that had better not be continued.

Associations, unions, any grouping of men, must have a common purpose and the expectation of advantage to be gained, if they are to prosper and to endure. The fundamental, underlying purpose of the trade associations in the coal industry is to improve the conditions under which coal is marketed, to assist in taking the guesswork out of the coal business and render more stable its operation. Uniform cost accounting is an obvious aid to these ends because it sets up standards. Credit information is organized protection. Open market reports, those giving the results of a previous day's or week's business, are legitimate tools of trade; just as much so as reports of production and car supply.

These props to efficient operation of the trade are being assailed and the foundation of the coal trade associations is being undermined. President Harding in his address to Congress last week referred to "open price associations" and stated that the Federal Trade Commission had advised him that to these agencies is to be attributed the failure to adjust consumers' costs to basic production costs—in other words, because one business man knows what his competitor is charging for his product, the price is maintained. The President referred to a measuring rod of fair prices that will satisfy the country and give us a business revival to "end all depression and unemployment." What better measuring rod of fair prices can he desire than the reports of closed transactions, as he says, operating "within the law"? He suggests some suitable inquiry by Congress. Can he be referring, in relation to coal, to a continuation of the work of those eminent members of the ruling party, Senators La Follette and Calder?

Mr. Harding would have been better advised had he

been told that it is not so much the price levels of basic commodities that is causing the hesitation in construction and industry as it is the uncertainty with respect to the stability of those levels. So with respect to coal prices. Coal producers want business, and although the ruling price for smokeless is accepted as $3.50—there being no "open-price association" to give the figure a stamp of authority—coal of this grade has been sold as low as $3 by those who are willing to figure closer than others. Perhaps more are quoting the lower price than is generally known, and the very absence of "open-price" reports is serving to keep up the general price level. Definite and positive knowledge of the price of copper has not served to maintain a price at which even half the mine capacity can be operated. Exact figures at which steel products are being sold—and they are what "open-price" reports are—have not put the price down.

There is a new era dawning. No machinations of a power-hungry coterie of senators can prevent the United States becoming a part of the world. The future of this country as an industrial nation depends upon the degree to which we present a national front to our national competitors—that is, to how far we go in overcoming our provincialism and combine. It is for this reason that organization within the coal industry must be maintained and strengthened. We are prone in times of dull business such as these to stress the need of education of the consumer, when we need as well the enlightenment of the coal producer. It is times such as these that make difficult the work of the trade organizations and it is in these times that their efforts are most needed. The man of small vision quits, the association that cannot see beyond its immediate pressing selfish interests would withdraw. Growing pains all.

The first need of organizations in the coal industry—to promote confidence within the trade—has been well started on its way. The larger task lies ahead—to gain the confidence of the public. The President's message conveys a measure of the common suspicion of business. To the larger problem the coming spring meetings of the national associations of producers, jobbers and retail coal merchants might well address their thought.

An Ore Engineer Questions Coal Methods

EVERY little while foreigners come to our shores and reveal somewhat soon that there are, at least, two things with which they are acquainted—our country and their own. In their untrue comparisons they prove that what they know about their native land is really a dead and not a conscious knowledge and that what they know about ours is the most loose of generalizations. Arthur J. Mason in his article before the American Economic Association, printed in another part of this issue, finds himself in a different but not entirely unsimilar predicament. Very naïvely he compares the surface methods of the iron industry with the underground methods of the coal industry, forgetting that the iron industry has its underground workings and the coal industry its surface operations and that "like with like" is always a good principle of comparison.

He opens his address by comparing the personnel, high and low, in the two industries and declares in favor of the ironworker and his employer. As regards the former it might be permissible to inquire if the United States Steel Corporation believes that, by reason of the freedom from hard work which its "dock wallopers" and the dockmen at its furnaces experience under the new régime, the morale of these men has been raised in any degree above that of its coal miners. It is probable that the company would deny the superiority of these dock workers, and would declare that the men in their mines are the more responsible employees. That, it is true, probably is the result of other causes than the nature of the work which has to be accomplished by the two classes of workmen.

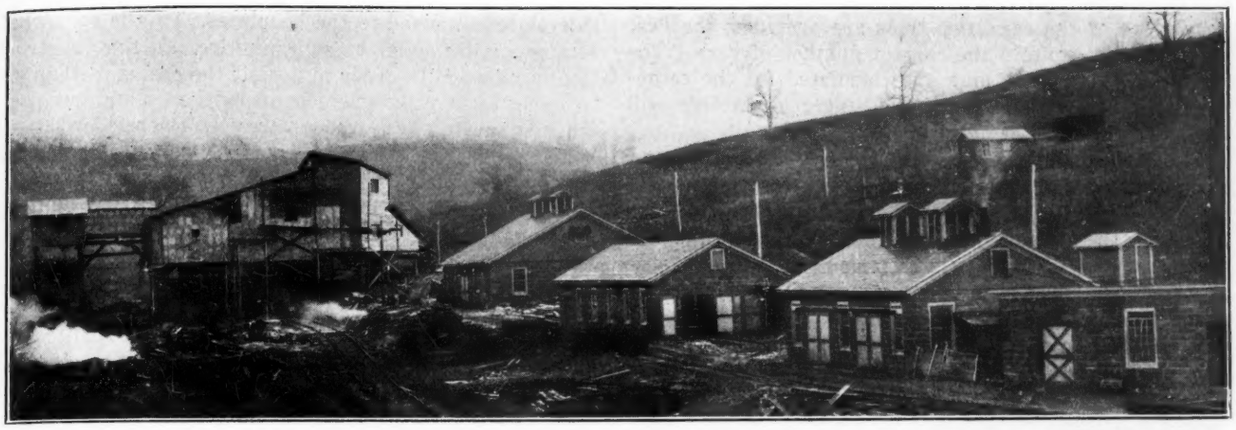
The coal workers, being housed for the most part in small towns and company houses, are more favorably circumstanced than men who drift from place to place and live in slums which the company does not own and cannot control. As mines usually are opened in country sections, they are worked extensively by men who were originally farmers and therefore are of native origin. These are advantages which a little hard labor cannot overcome. Mr. Mason apparently has a horror of hard work. To him a hand shovel is a symbol of debasement even more than an emblem of efficiency.

He leaves it to be assumed that not a hand shovel is to be found in the iron mines. As a matter of fact machine loading has made about equal progress in both industries, though conditions are more favorable in metal mines, where the material is heavier and gives the machine more work for a given range and where the ore can be loaded without scruple as to breakage.

His comparison of the methods in the Panama Canal with those in the mines is amusing. Does he not know that in bituminous coal strip pits bigger shovels are used than were used in excavating the Panama Canal? The methods and equipment employed in the shoveling of overburden in surface mines is something of which the bituminous region may well be proud. The small locomotives and cars in these strippings and all the Lilliputian equipment in the average anthracite open-cut mines might be the subject of animadversion, but the actual shoveling of surface material in the bituminous strip pits is done by equipment so mammoth as to place it in a class by itself. Only just recently have the big pits in the anthracite and iron regions begun to see the light as to the advantage of these stupendous shovels.

His third count, that a reform in use and distribution of coal at large cities is needed, is not made as an ore engineer but as a citizen, and undoubtedly he is right. In answer to his fourth criticism, that coal should be classified and pooled like wheat and iron, it may be said that at Tidewater that is just what is being done. More of the same kind of work is inevitable later. Quite strongly does he point out the advantages of this practice.

However, he is, we think, disposed to give somewhat too much emphasis to the simplification of practice in the iron ranges. As a matter of fact, while there are four standards, the ore does not, of course, align itself with any of them with any exactitude, many kinds of ore coming from each pit. At the mine an analysis is taken of each carload, and when the cars arrive at the dock they are dumped in such a manner as to supply as nearly as possible the exact rating required by the furnace for which any given boat is plying. Boats are loaded with material that averages up to a given grade and not with ore from a single deposit, often not from a single mine, and that distinction is important. When the boat arrives payment is made on the basis of the analysis which is made of its contents.



SURFACE WORKS, CONSOLIDATED COAL & COKE CO., PLUMVILLE, INDIANA COUNTY, PENNSYLVANIA

At Plumville Coal Is Dumped in Mine and Carried by Apron Conveyor to Tipple

Refuse from Picking Table Is Conveyed to Separate Rock House—Natural Gas Engines Drive Generators Supplying Power to the Mines and Prove Themselves Cheaper Than Steam-Driven Machines

By Donald J. Baker
Wilkinsburg, Pa.

AT PLUMVILLE, Indiana County, Pennsylvania, near the Armstrong County line, at a plant of the Consolidated Coal & Coke Co. a steel apron conveyor has been installed in the slope which leads from the surface down to the coal bed. This slope has been driven to develop some 2,800 acres of coal which lies in a nearly level deposit. This bed has a cover, at the tipple, of about 70 ft. When this plant was constructed, a little over two years ago, it was decided to depart from the somewhat usual practice of employing a hoist and to dump the coal inside the mine, bringing it out, as stated, by a steel apron conveyor. Dumping underground is becoming increasingly common, the coal being brought to the surface by skip, belt or, as in this case, by an apron conveyor.

It was confidently believed that such an installation would prove so advantageous in operation that it would far more than compensate for the greater expense of this form of equipment. With such a conveyor fewer men are needed at the bottom and upon the tipple. The foot of the incline was extended so that its slope went approximately 16 ft. below the mine-car tracks, this extension being made so that a storage hopper and dump could be provided. A feeder is used to bring cars to the dump.

Feeder Speed Regulated to Suit Conveyor

Main-line haulage locomotives of the 13-ton Baldwin-Westinghouse type bring trips of fifty or sixty 2-ton cars to the feeder in single trips. Each locomotive on reaching the feeder passes on until the first cars have been engaged by the dogs. The cars are then uncoupled from the locomotive, which then travels up the feeder, the grade being only slightly against the load. When it reaches the head of that short incline it switches back and picks up the empties.

The power for the feeder is provided by a 15-hp. motor which is belt-connected to the feeder flywheel. Between the motor and flywheel several gear reductions and the driving sprocket are interposed. Several operating speeds are provided so that the cars may be fed with the frequency requisite to satisfy the need of the conveyor by which the coal from the bin is carried up the slope. This later conveyor does not always have an equal hourly coal-carrying capacity, as it is operated at a speed to suit the needs of the occasion. At the head of the car haul are placed the operating levers that control it.

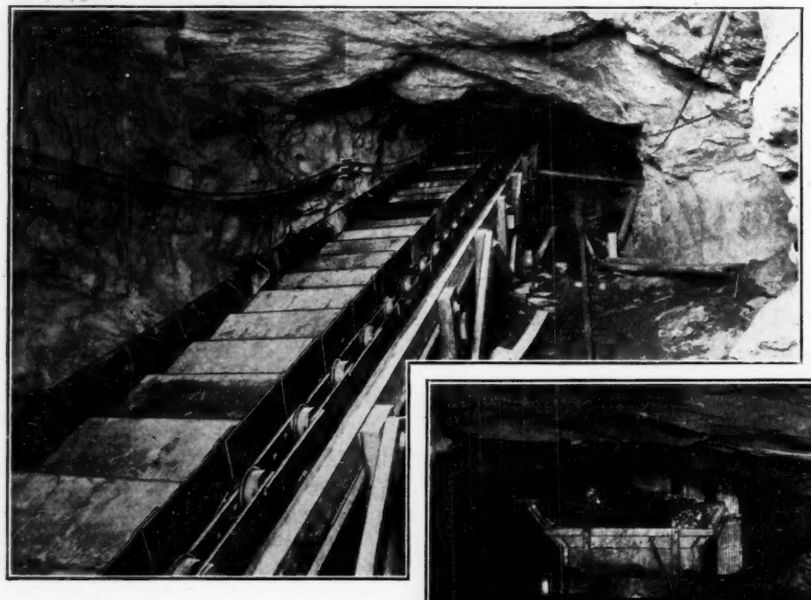
They are so placed that the man who uncouples the cars may also control the trip feeder. When a load reaches the head of the haul the movement of the feeder is temporarily arrested so that the car can be uncoupled. Being on a down grade it runs freely and passes over a Streeter-Amet scale, where it is automatically weighed. It then arrives at the Phillips crossover dump, where its load is discharged, and it passes onto the kickback and is directed to the empty track. This road parallels the loaded track but between the two is placed a locomotive switching track.

Trip Maker Assembles Empties into Trips

The empty track, like that for loads, is level, and consequently a trip maker has been installed to eliminate the necessity for pushing cars by hand. This trip maker operates on exactly the same principle as the trip feeder, but its operation is entirely independent. The man who couples the cars regulates its running. As fast as cars arrive at the head of the trip maker they are coupled up to the cars ahead, and the string of cars in the track is pushed forward by the mechanism one car length, so as to leave room for the next car that will leave the kickback. However, should more cars be received than will constitute one full trip, by failing to

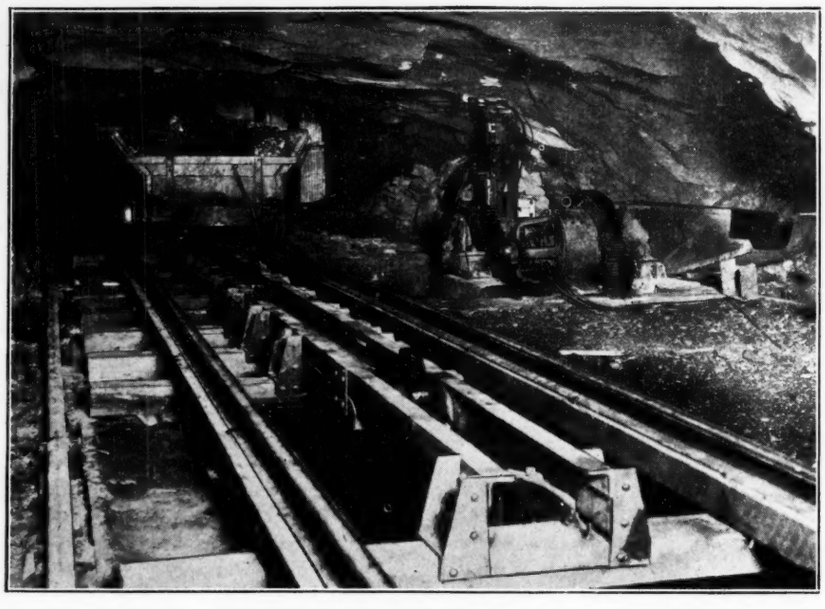
couple one of the cars, two trips are provided, the first of which will contain the correct number of cars. The empty yard is 800 ft. long and calculated for the reception of many more cars than a single locomotive will haul into the mine at one time.

The dumped cars deliver the coal into a 5-ton hopper, from which it is discharged by a reciprocating feeder which insures that the conveyor and also, in consequence, the preparation machinery on the tipple will be evenly loaded. This feeder forms the bottom of the hopper. The four sloping sides are not integral with the bottom but suspended from above. The feeder plate oscillates on four wheels which are supported on shafts running in roller bearings. This construction assures



Trip Feeder

The feeder elevates the loaded cars in a trip up a short, easy slope at the mine bottom. When the first car of the trip reaches the top of the incline the trip feeder is stopped while the operative uncouples one car from the trip.



Apron Conveyor

This conveyor, though it appears nearly level, is pitching upward on a grade of from 28 to 30 deg. Note the side plates on the conveyor, which travel with it and thus circumvent the friction which exists when coal rubs past stationary side plates.

greater ease in operation as well as easier and more efficient lubrication than if the shaft were attached directly to the plate. The plate is caused to oscillate by an eccentric shaft.

Lumps on Conveyor Ride on Bed of Slack

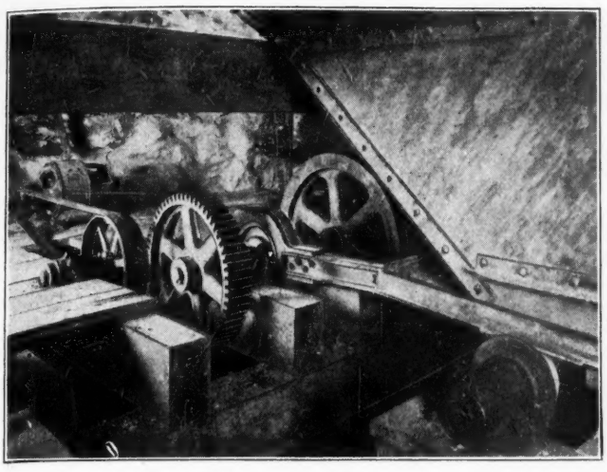
From the feeder the coal is passed over a slotted lip screen, which roughly separates the lump from the fine material, so that in traveling on the conveyor the slack will cushion the larger lumps. When the conveyor delivers its burden to the tipple screen the lumps are still resting upon the smaller material. The screens are thus enabled to perform their function in a minimum space of time and with minimum degradation.

The conveyor is 248 ft. long from center to center and lies on a 28-deg. slope. It is of the apron type with the side plates attached to the bedplates. This is somewhat of a departure from common practice, but this construction is followed in order to permit the entire mechanism to move upon rollers which operate on a narrow-gage track supported by a wooden trestle. Each side plate is bolted to an iron bar which carries a roller. The corresponding bedplate is bolted to the same bar.

A mechanism of this kind must of necessity perform heavy duty, and the construction here followed lends itself admirably to that end. As built the conveyor is not subjected to the undue friction that would result if pieces of coal or other material were traveling between stationary sides, which is the construction usually provided in conveyors of this kind. The moving parts of this type of conveyor take the head and tail sprockets quite as easily as do those of the ordinary pan conveyor.

The conveyor is driven by a 75-hp. motor installed near its upper end. This motor is controlled by means of a push button located beneath the building conveniently adjacent to the platform upon which the car trimmer ordinarily works. This man is thus enabled at any moment to stop the movement of the conveyor and consequently the flow of coal through the tipple. This he does when he desires to shift cars either under the loading chutes or the loading boom. At the head of the conveyor, which is within the tipple, the coal is discharged onto balanced shaker screens.

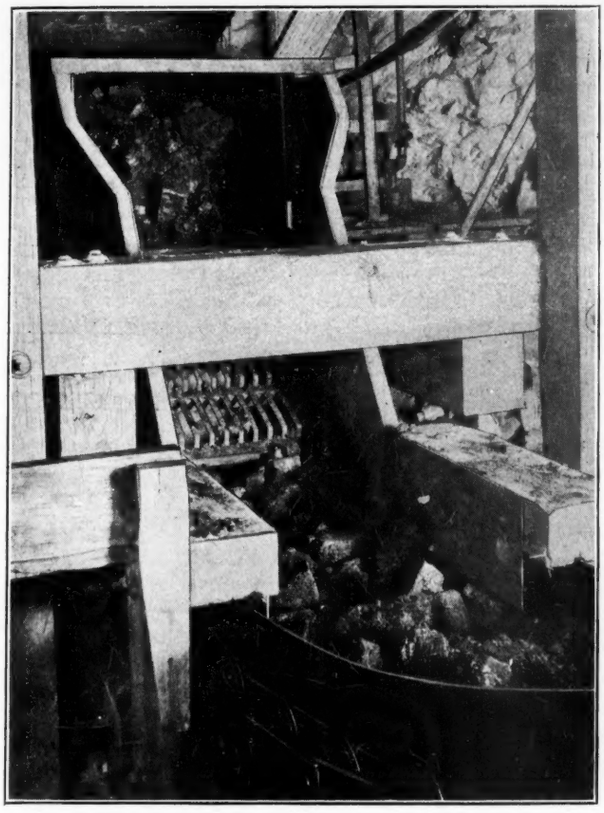
As has already been stated, these screens are balanced. the two sections, forming a continuous screen bed, being operated from the same shaft and driven by a



OSCILLATING FEEDER WHICH LOADS THE CONVEYOR

A 5-hp. motor is belt-connected to a pulley which, through gear reductions and an eccentric, operates the feeder. The oscillating feeder plate is not mounted on trucks, though it carries the full weight of the coal in the bin. It rests on two shafts, the end of one of which is shown.

15-hp. motor. The first screen contains slotted perforations arranged in steps. It is 5 ft. wide, and the perforations measure $\frac{5}{8}$ x $\frac{3}{4}$ in. Material under this size is thus removed, while the larger pieces pass on to the second screen. A veil plate is suspended by counterweights above the screen, so that in an emergency run of mine may be loaded by lowering the veil and elevating the screen plate. Thus either slack or run of mine may be loaded into cars upon the first track. Ordinarily,



FEED CHUTE LOADING CONVEYOR AT FOOT OF SLOPE

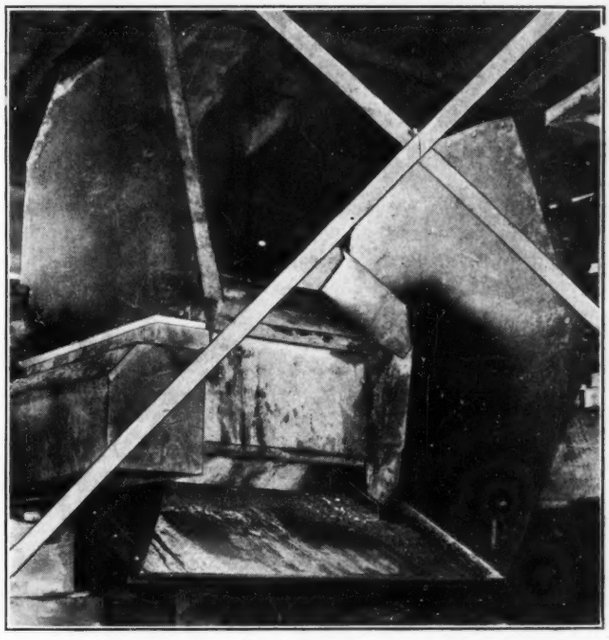
Note the coal as it leaves the chute and its changed appearance as it lies in the conveyor. The fine coal is screened out and falls on the conveyor before the lumps can reach it. Thus the coarse coal falls on the fine and travels up the slope cushioned by slack and so saved from degradation.

however, only slack will be loaded under this section of the building.

Slack Storage Steadies Tipple Operation

When slack is being loaded at this point the product first passes into a storage hopper that is equipped with an undercut gate. When the trimmer desires to move a car upon this track it is not necessary for him to stop the conveyor, as room is provided in which to store this product for a short space of time. During the period required for shifting cars slack is filling the bin and loading may proceed upon the other two tracks.

The second portion of the screen is provided with $1\frac{3}{4}$ x 2-in. slots and its motion is exactly the reverse of that of the section above it. Here the nut size is



CONVEYOR HEAD DISCHARGING ON SCREENS

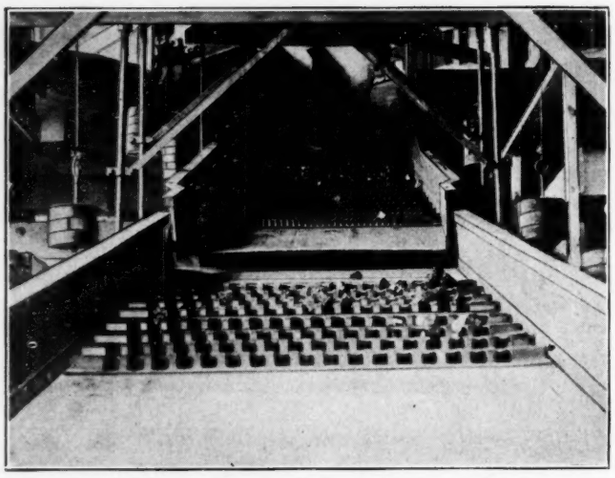
Flaring sheet-iron sides encompass the conveyor head and serve to prevent loss by spillage as the coal is directed on screens. Note that the sides as well as the bottom of the conveyor move up the slope and over the end sprockets.

removed. Slack also may be loaded in an emergency through a cross-connecting chute leading beneath the building from the first section of the shaker. The second screen section also is provided with a counterweighted veil plate, so that, if necessary, run of mine may be loaded upon the third track.

That track is utilized chiefly for the loading of lump. From the discharge lip of the screening section the coal passes to a picking table extending at right angles to the shaker. This picking table terminates in a hinged loading boom, both level and inclined section being driven by a 10-hp. motor situated at the rear end of the table. The boom is counterweighted and may be raised and lowered from controls on the trimmer's platform. Its vertical movement is, of course, electrically actuated.

Steel Conveyor Takes Refuse to Waste Bin

Adjacent to the tipple and at its farther end a refuse bin has been constructed. This building houses the pickings from the table. A narrow steel conveyor operating at right angles to and underneath the flooring below the picking table brings the refuse to this point. This conveyor has a speed of 80 ft. per min.



END VIEW OF THE TWO SHAKER SCREENS

The many counterweights may occasion remark. They aid in the suspension of the veil plates, which are lowered so as to cover the slots in the screens when run-of-mine is to be loaded on any of the three tracks under the tipple.

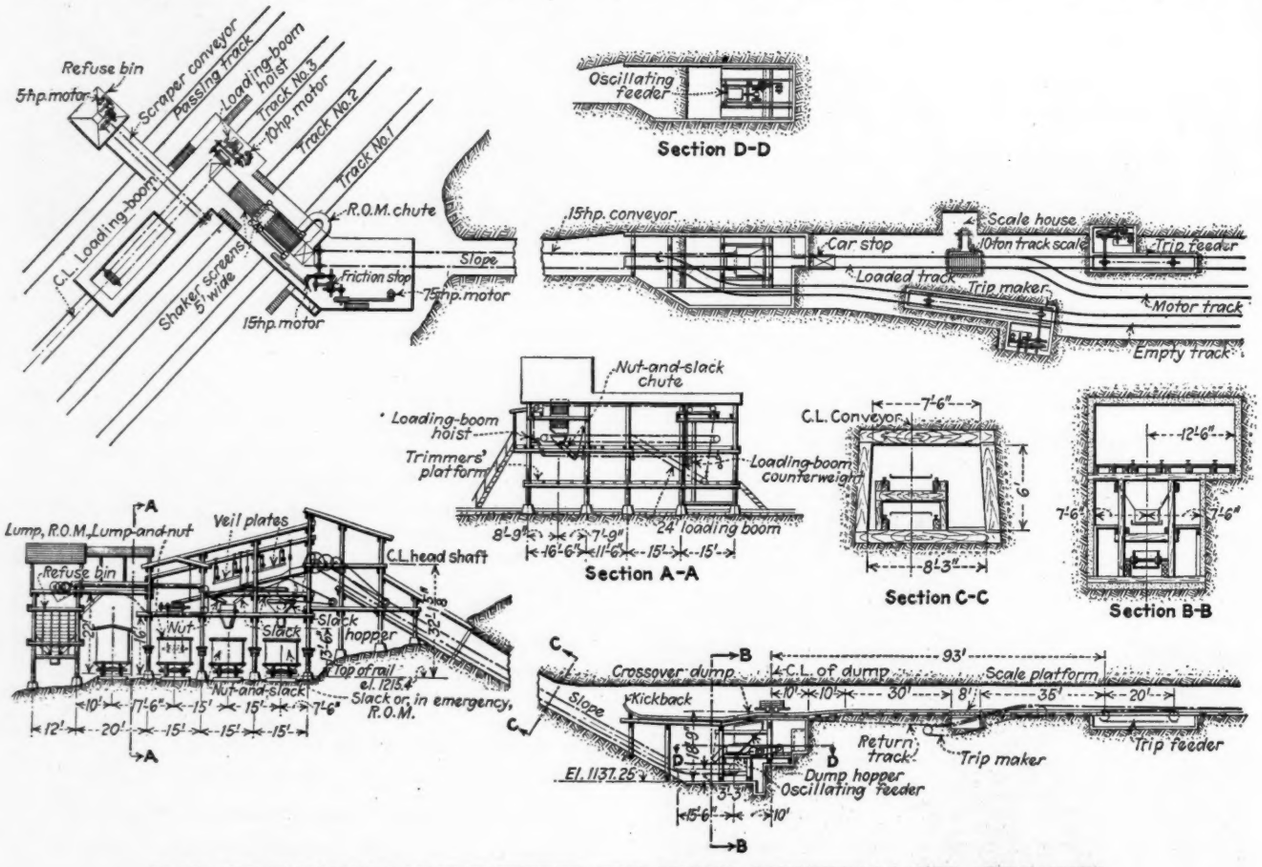
and is operated by a 5-hp. motor situated in the bin building. It passes over one head and two tail sheaves. The return is made above the picking table, thence vertically downward 6 ft. in a box compartment to the run beneath the tipple floor. The lower tail sprocket is provided with suitable take-ups.

As refuse is removed from the coal on the table it is tossed into chutes leading to the lower strand of this conveyor. In this respect this tipple varies radically from others in the Pittsburgh district. The common practice there followed is to chute the refuse by gravity to a bin within the structure itself. By storing the slate in a building apart from the tipple, that structure can be designed more compactly, and the preparation and loading equipment can be brought more intimately together. At the present time the slate is used for filling low places around the surface works. Eventually, however, it will be loaded into railroad cars and dumped at some distance from the plant.

One Man on Tipple, One on Railroad Car

So simple is the installation of the preparation and handling equipment that only two men are, and indeed will be, employed in and about the tipple even though eventually it will have a capacity of 4,000 tons in eight hours. One of these attendants is stationed at the picking table while the other trims and loads cars beneath the tipple.

The elevating or mine conveyor may be operated at three distinct speeds. That which delivers 2,500 tons of coal per day is at present employed. The mine is not yet sufficiently developed to permit the delivery of maximum tonnage to the tipple, and the surface works have only recently been completed. At present the tipple is not kept working a full day. Until capacity operation can be attained loads are allowed to accumulate at the bottom landing in such number that when the conveyor is started it is able to keep going at



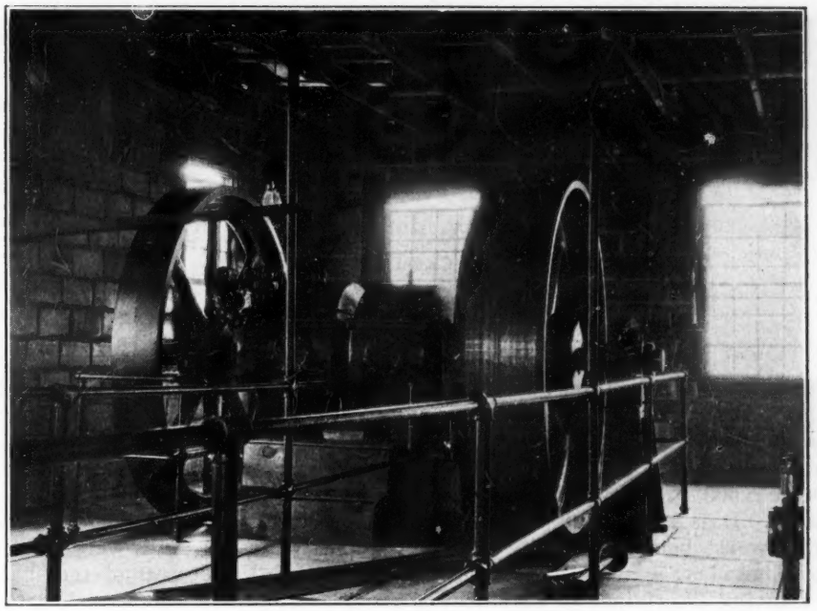
PLAN AND ELEVATION OF TRIP FEEDER, TRIP MAKER, CONVEYOR-LOADER APPLIANCES, HEAD OF MINE SLOPE AND TIPPLE

A slack hopper over track No. 1 holds enough coal to enable the car dropper and trimmer, who is one and the same man, to move up a railroad car without stopping the conveyor and the tipple machinery meanwhile. The screens are set on an angle of 15 deg., but the perforated plates are bent so as to form a series of steps with horizontal treads and vertical risers. The slack is taken out by passing it through ¾ x ¾ in. perforations. Nut is removed by passing the material which does not fall through this screen onto one having 2 x 1¼ in. perforations.

The distance from the first timber to the point of intersection of the grades near the foot of the incline is 185 ft. 3 in. and the whole distance between centers of conveyor sprockets is 248 ft. Note that the inclination on the trip feeder is so small as not to be noticeable in the drawing.

Gas Displaces Coal

At this mine, where natural gas is readily available, gas has displaced coal for the generation of power. The 100-kw. 250-volt direct-current generators are driven by three 165-hp. gas engines. They are steady and economical in operation and can be readily started by using compressed air. At this mine the gas is handy, whereas the high-tension current would have to be carried a long distance.



capacity for a few hours. As the output is now between 800 and 1,000 tons the tipple can be kept running only a portion of each day.

The plant is served by the Buffalo & Susquehanna R.R., one of the smaller carriers of Pennsylvania. The company owning this road has a subsidiary which operated a mine also located at Plumville. The subsidiary concern was unable, however, to fill the fuel requirements of the railroad, which finds it profitable therefore to purchase coal from the Consolidated Coal & Coke Co.

Consequently the firm has enjoyed a somewhat enviable position, as its market, as one might say, has always been located beneath its tipple, the railroad taking over the loaded cars at that point. It is consequently to the railroad's advantage to keep the plant well supplied with empties. This it did throughout the period when most coal-producing concerns were clamoring for cars. The result has been that thus far not a single day since operations began has been lost by reason of car shortage.

Gas Engines Supply All the Needed Power

Mention should be made of the generating equipment installed at the power plant, as it is markedly different from that usually found at bituminous coal mines. Natural-gas engines drive the direct-current generators. These units are three in number and were manufactured by the Bessemer Engine Co., of Grove City, Pa. Each machine has a capacity of 165 hp. and is belt-connected to a 100-kw. 250-volt generator. These engines are in constant use and cost less to operate, even when the cost of the fuel consumed is considered, than do the steam engines at the near-by plant of the Buffalo & Susquehanna Coal Co.

In starting the engines are "turned over" a few times by compressed air, when they begin operation as internal-combustion engines. The company officials maintain that for an isolated mine this type of power plant is the most efficient now available, for dependence is not placed in long high-tension transmission lines, as is the case where energy is purchased. The services of three or four firemen who would be necessary if the plant were steam-operated also are dispensed with.

May Use Midwest Coal for Water Gas

THAT it may be possible to replace coke by the cheaper grades of Indiana and Illinois bituminous coal in the generation of water gas, thus reducing the cost of operation of many water-gas plants in the central Mississippi Valley that have been experiencing financial difficulties, is indicated in Technical Paper 246, "Water-Gas Apparatus and the Use of Central District Coal as Generator Fuel," by William W. Odell, fuel engineer, just issued by the U. S. Bureau of Mines.

By reason of the greatly increased cost of the gas oil which is used to enrich water gas, and the higher costs of coal and labor, many gas companies, especially those having franchises that call for the delivery of gas of a certain quality at a certain price per thousand feet, are having financial difficulties, says the author. Reconstruction of plants to manufacture coal gas instead of water gas is difficult if not economically impossible under present conditions. The situation calls for the use of practicable economies and methods. One of these economies is the use of cheaper grades of coal to replace anthracite or coke. In the course of its investigations for increasing efficiency in the use of fuel the Bureau of Mines has given attention to various problems bearing on the manufacture of water gas. This paper presents certain preliminary studies made while considering the possibility of substituting Indiana and Illinois coal for coke in water-gas generator sets.

The report is founded on the author's experience during a number of tests of several months' duration wherein Central District bituminous coal was used as generator fuel, but is preliminary to a study of the design of water-gas apparatus especially adapted for use with bituminous coking coal. Some of the striking differences between the operation with coke and with coal fuel are pointed out. Indications are made of the saving of generator fuel realizable in operating with coal fuel when means are provided for utilizing the excess heat in the blast gas and obtaining the same efficiencies as prevail when operating with coke fuel, which is the usual practice, favored because supplementary to the old-style bench-retort system of making coal gas.

Despite a High Hill and Winding Approach Tunnel Rapidly and Accurately Driven

Tunnel of 7 x 10-Ft. Cross-Section Driven at Rate of from 440 to 700 Ft. Per Month, While on a Survey of Between Three and Four Miles the Centre Lines Lacked an Inch and a Half of an Exact Coincidence

BY M. W. VENABLE
Charleston, W. Va.

RECENTLY a tunnel was completed for the Plymouth Coal & Mining Co., of Plymouth, W. Va., the object of which was, by passing through barren territory, to reach a body of high-grade coal lying some 6,400 ft. eastward from the old workings of the mine. It is believed that a good record was made in this work, both in rapidity of driving and accuracy of alignment.

Having ascertained by core drilling the nearest point at which good coal could be found east of the old workings, a suitable place for a shaft was selected, and work begun. This shaft, 12 x 20 ft. in dimensions, was sunk through the ordinary shales and sandstones of this region, reaching the coal floor at a depth of 144 ft. It was completed and ready for the driving of the tunnel and developing the mine fifty-seven days after work began.

A survey was then made from a point in the head of the old workings (at A on the map) running westward to the mouth of the mine, thence to the right and along the valley of a small creek through timbered lands, crossing the ridge 450 ft. above tunnel grade, thence to the shaft, down it and about 180 ft. along a short entry driven westward at right angles to the long axis of the shaft, to two spads or eyelets in the roof, on the line of this entry.

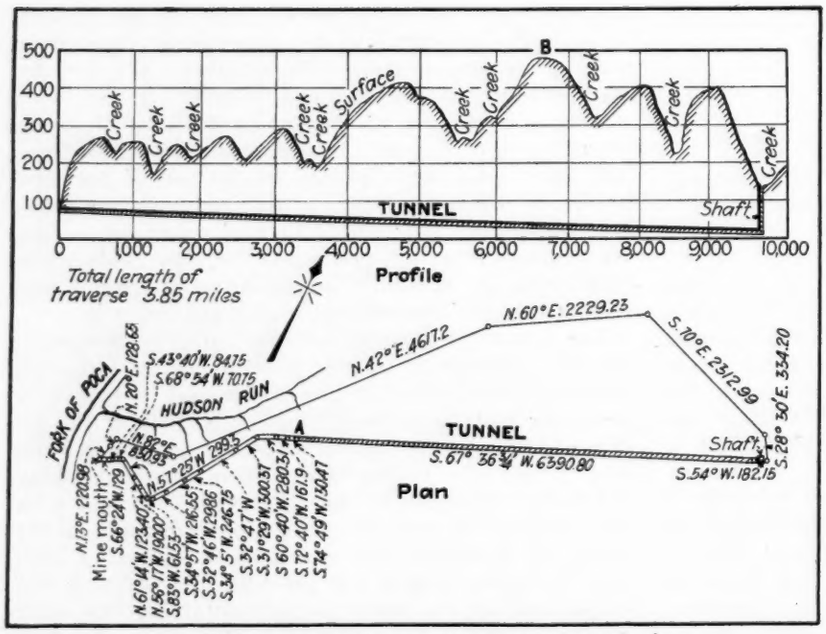
The traverse was calculated for the length and direction of the tunnel, the total length of traverse being 3.85 miles. The point A in the mine was then located on the surface in the usual manner, and the calculated course of the tunnel was run for about two-thirds of its length, or 6,550 ft., to a point at *B* on the main ridge, where hubs were carefully set. Next the point in the heading west of the shaft was similarly located on the surface and the calculated course of the tunnel was run westerly to the two points already set at B. It thus was ascertained that the two lines passed each other practically parallel and only ½ in. apart. No correction was attempted, but driving was commenced on the centers as calculated.

TUNNEL DRIVEN THROUGH CANNEL SLATE

Work was begun on Oct. 15, 1919, on the west end, and on Feb. 20, 1920, on the shaft end of the tunnel. With the exception of six weeks lost by reason of a strike, the work was prosecuted continuously, Sunday and holidays excepted, until the headings met on Feb. 17, 1921, the center lines passing each other within 1½ in. with an angular divergence of less than one minute.

In transferring the line down the shaft the plummet wires were less than 8 ft. apart, fine piano wire being used. The tunnel was 7 x 10 ft. in cross-section. The material excavated was a petroliferous black shale almost a cannel coal in physical characteristics, though somewhat harder. It drilled and blasted well and was generally self-supporting. The grade undulated considerably, following the strata, but had a general drop of about 80 ft. from the mine mouth to the shaft, a distance of 9,700 ft.

As no parallel entry was driven, adequate ventilation was a serious consideration. This was accomplished, however, by means of 12-in. vitrified sewer pipe laid in cement. Air was supplied by 16-in. electric fans. At points 2,000 ft. in from each end 14-in. booster fans were placed. These kept the air in good condition until about the time the headings met, when it became slightly stagnant. About 100 ft. of flexible canvas hose was used near the faces because of blasting. No trouble on account of ventilation is expected in operating this tunnel with electric motive power. The sewer pipe used for conveying the air was taken out with little



PROFILE AND PLAN OF PLYMOUTH TUNNEL

The grades on this illustration are exaggerated fivefold by the use of a vertical scale five times as large as the horizontal. Nevertheless it is easy to see that the survey was made under most adverse conditions. The use of sewer pipes as a return airway for a distance of three quarters of a mile from each starting point shows how conduits of this kind can be effectively utilized.

breakage soon after the two sections of the tunnel met.

After the work was systematized the driving was done in 8-hr. shifts, with two men and a helper to the shift, drilling, blasting and loading all material. The average monthly advance was 400 ft., while the best drive for any one month was 700 ft. The track is of 30-in. gage and will be laid with 60-lb. steel rail. The car capacity is 2½ tons and the motive power will be furnished by 20-ton electric motors. The accompanying map and profile show clearly what work had to be done.

Survey work on this job was done under my direction by Charles B. Holsclaw. No attempt was made to measure exact horizontal distances. The slope distance multiplied by the cosine of the vertical angle was used for their determination, and as the ground was quite rough, practically all measurements had to be made in this way. W. C. Mitchell, vice president and general manager, had charge of the work for the company.

Looking Ahead With the Diamond Drill*

Lehigh Valley Coal Co. Has Drilled About 96 Miles of Diamond Drillholes to Ascertain Cover Over Coal, Some to Vein and Some to Upper Surface of Rock—Methods of Locating and Recording Such Drillings

By Robert A. Evans†
Wilkes-Barre, Pa.

A FEW years ago, having platted a borehole record on our maps, I remarked that the use of the diamond drill was fast becoming as necessary an adjunct to mining as the miner's drill. That borehole was No. 747 of the Wyoming Valley series. Last week I received a record of borehole No. 4,101. Allowing 800 unassigned numbers for the four divisions in Wyoming Valley, I realized that within the past eight years we have drilled 2,554 boreholes having an aggregate depth of ninety-eight miles.

About 2 per cent of this drilling was done with the churn drill, the holes ranging in diameter from 4 in. to 20 in. and in depth from 50 ft. to 700 ft. These holes were used for operating purposes, short cuts for steam lines, electric cables, air lines, silt, pump dischargers, etc. The other 98 per cent was accomplished with the diamond drill, and the data thus obtained supplied the mining engineer's department with a knowledge of the otherwise hidden condition of the coal measures and overlying strata, much as the Roentgen rays reveal to the surgeon the subcutaneous structure of the body. This great amount of diamond drilling is made necessary by two factors: safety and economy.

Diamond Drilling as a Safety Factor

It was found by unfortunate experience and by subsequent drilling that the rock floor of Wyoming Valley is covered with 50 to 300 ft. of sand, gravel and clay, which was deposited by the river long after the glacial period, at which time the ice caps from the north ground down this rock far below the original level of the valley (Bulletin 45, Bureau of Mines, 1913). The voids or space between the grains in the sand deposits and the pebbles in the gravel are filled with water which seeps in from the river and the surface.

Unfortunately, the glacial action did not plane the rock floor smooth and our drilling reveals the existence of hills and valleys, perpendicular cliffs 100 ft. to 150 ft. high, and pot holes from 40 ft. to 300 ft. in diameter and from 10 ft. to 60 ft. deep. The cliffs were due to the varying hardness of the rock, the ice scooping down deep into the softer rock and meeting greater resistance in the harder material, and the pot holes were caused by streams under the glaciers which, swirling along for thousands of years, gradually bored down into the rock stratum at the eddies and formed these circular depressions.

Under this floor are the beds of anthracite coal which have made Wyoming Valley one of the most prosperous sections in the world. These beds also have their hills and valleys and perpendicular cliffs caused by the same great force which formed our surrounding hills, and our whole Appalachian Mountain chain. As a result of these actions we find the coal beds at varying depths below the floor of the valley.

The problem for the engineer to determine is how close to the rock floor of the valley can we mine with absolute safety to the men and the workings. In the early days of mining many serious disasters occurred from removing the coal at points where it was too close to the rock floor the mining resulting in a failure of the roof of the workings and a consequent inrush of the saturated sand and gravel (Bunting, American Institute of Mining Engineers Proceedings, 1915). To determine what is a safe thickness of rock over the workings a thorough study must be made of the composition of the surface wash and of the character of the rock over the coal bed.

For instance, where the roof of the bed was a hard sandstone the coal was successfully mined within 20 ft. of the top of the rock under wash varying in thickness from 50 to 75 ft. In another case the rock was poor, but the problem was solved by driving the breasts only 15 ft. wide, thereby diminishing the span of the slab. In another place it was found that while the surface wash

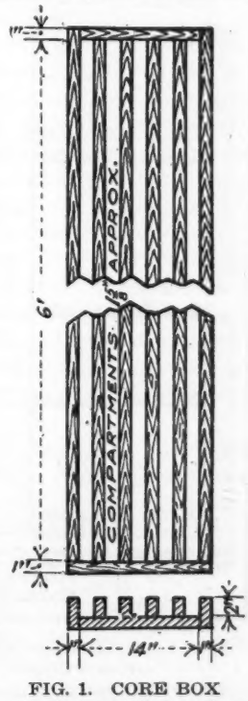


FIG. 1. CORE BOX
Rock is put in core box for inspection, but is thrown out after examination by the engineer in charge.

*Reprinted from Lehigh Valley Coal Co.'s *Employees' Magazine.*
†Mining engineer, Lehigh Valley Coal Co.

BORE HOLE NUMBER	COLLIERY	PROPERTY	NORTHING.	SOUTHING.	EASTING	WESTING.	SURFACE ELEVATION	DEPTH	DRILLER	DATE FINISHED	COST	COLUMNAR SECTION PLOTTED	KIND OF HOLE AND SIZE	REMARKS
4100				293598		355026	1187.89	206.00'	J. Doe	10-21-20	$491.99	10-25-20	O.D. 1¾"	2 bags of Cement in hole.
4101														
4102														

FIG. 2. DATA REGARDING BOREHOLES ARE CAREFULLY ENTERED INTO A BOOK FOR REFERENCE
Record not only contains details as to drilling location and cost but gives the co-ordinates of the survey for locating the hole on the mine map. As they are all entered in one volume, they are handily located for examination.

was 125 ft. deep, a stratum of blue clay 40 ft. thick immediately overlaid the bed, and it was found possible to mine directly to this stratum, leaving no rock over the bed. Under these conditions to recover a maximum percentage of the coal at a minimum risk the mining engineer must have some means of looking ahead of the workings. His X-ray is the diamond drill, and the data obtained must be gained intelligently and with the utmost accuracy.

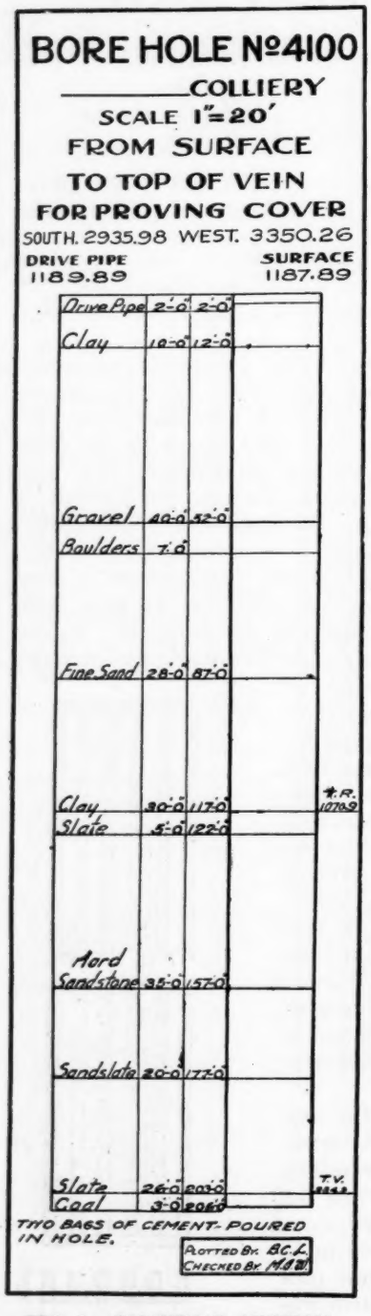


FIG. 3. COLUMNAR SECTION OF BOREHOLE
Every borehole is plotted, the names of the different types of strata being standardized so that like material is always similarly described. Comparison is easy in consequence. Lineal scale used is twice that in cut.

It is known, say, through experience that the rock forming the roof of a certain coal bed is of such a character that breasts 24 ft. wide can be driven with absolute safety to points which are 75 ft. vertically below the rock floor of the valley. Our cross-sections, based on the elevation of the workings and general borehole data, show that the faces have advanced to the point where the overlying rock is from 125 ft. to 100 ft. thick.

The engineer in charge then knows that he must have more detailed knowledge of the topography of the rock floor, and he proceeds to lay out a sufficient number of boreholes to obtain it. From the data at hand he plats, on a blueprint of the workings, the outline of the area which will have a probable rock cover between 100 ft. and 60 ft. thick. (These preliminary limits vary according to whether the vein is flat or on a pitch.) He then lays this area out in blocks which are 200 ft. square when the rock-cover limit is to be over 50 ft., and 100 ft. square when less than 50 ft. He accommodates the lines to previous drillings or to the course of his workings.

At each corner of these blocks a borehole is to be drilled and he makes an estimate of the number of feet of wash and rock to be drilled through. Estimating the cost of drilling at a fair price per foot and making a proper allowance for attendance, he determines the cost of the work. An estimate is then made of the number of tons of coal involved and an application is made for an appropriation, the cost of the work per ton being stated. When the work is approved by those in authority and authorized by the president, the contract for drilling is let out on competitive bidding.

Great accuracy must be used in the preliminary location of these boreholes. A start is made from a survey of known accuracy and stakes are set at each hole location, a continuous survey carried from stake to stake, and a closing meridian and co-ordinate tie made from the last stake to a station of a closed survey.

Preliminary elevations are taken on the stakes and on the surface at the stakes with the same degree of accuracy. Each borehole is given a serial number, which is marked on the stake by the location party. As a check this survey is calculated and platted in pencil in the usual way. I have seen several cases where drilling was valueless because of careless and faulty preliminary location.

Contractor and Drill Runner Keep Record

When the hole has been staked out and the surveys are closed satisfactorily, the drilling contractor is supplied with a sufficient number of blank forms on which he is required to report the number of feet drilled during the week, together with a measurement of the various strata as exhibited in the core and a description of such strata. This is certified by the drill runner.

The back of this form is arranged so that it can be used for filling in the report number, serial number of borehole, date, colliery location, co-ordinate location, elevation, etc. This report is valuable in that the division engineer can keep in touch with the drilling and that it supplies an irrefutable original record. The driller is next shown the hole locations and is given a sketch of the layout showing the order of drilling, the borehole numbers and information as to the probable depth that each hole will be drilled.

It is here necessary to explain that our practice in drilling to prove rock cover is to drill at least one hole in each block directly to the vein—that is, in working to a rock cover greater than 50 feet, the vein holes are drilled in 400-ft. blocks, and in 200-ft. blocks where it is intended to work to a rock cover of less than 50 feet.

This is done in order to determine the character of the rock over the bed and to eliminate any possibility that the amount of rock cover might be erroneously calculated as a result of the elevations in the bed work-

ings being incorrectly recorded. Where it is desirable to obtain an elevation of the bottom of the bed, the hole is drilled through the coal for that purpose; otherwise it is drilled only far enough into the bed to identify it.

The other holes are drilled into the solid rock to a depth of 10 ft. to guard against the presence of large boulders such as pot holes are apt to contain. That 10 ft. of rock drilling is sufficient to prove solid rock is apparent from the fact that to my knowledge no boulder of such thickness has been encountered in any of our drilling.

The driller is now furnished with boxes built at the colliery, in which to place the core as drawn. (See Fig. 1.) Where the purpose of the drilling is to prove rock cover only, the core is thrown out after it has been examined and checked by the engineer in charge. When two or more drills are employed an engineer is in constant attendance from the time that drilling is started. It is his duty to see that the drill runner makes a close inspection of the washings while sinking the drive pipe, in order that the composition of the wash may be thoroughly determined.

It is of prime importance to know, for instance, whether the material directly on top of the rock is clay or quicksand and the thickness of the stratum. The experienced driller can readily determine this by his washings. Where only one drill is employed and the drill runner is so experienced and reliable that the division engineer does not feel warranted in placing an engineer in constant attendance, the drill runner is given a clear understanding of the importance of identifying the wash through which he drives his pipe, and is instructed to notify the office when he is confident that he has reached solid rock. Upon such notice a man is sent out so that he may be present while the rock is being drilled.

Why Some Coal Drillers Need To Be Watched

I may state that footage is of first importance to the driller, and I have seen cases where, in a caving hole, the 10 ft. of rock core he was required to deliver was substituted from another hole, while in another case the driller, after reaching the rock with great difficulty, found easy boring, and after drilling 20 ft. threw all but 10 ft. of core away. These cases are rare, the runners, for the most part, being reliable men, but with so much at stake, the element of chance should be reduced to a minimum.

When the borehole is finished the engineer measures the drill rods as they are hoisted, first placing a mark on the rods flush with the top of the drive pipe, as this is the base from which the driller records his measurements. The total depth is compared with the driller's measurement, so that any difference may be adjusted and checked on the spot.

The distance from the top of the drive pipe to the natural surface also is measured and compared, and a stake is driven near the hole with its top level with the top of the drive pipe, in order that the surveying party on final location may determine by levels the elevation of the driller's measuring point.

Where the hole has been drilled to the vein, the driller is instructed to prepare a sufficient quantity of portland cement to fill that portion of the hole which has been drilled through the rock. One bag of 100 lb. will fill about 50 ft. of the usual 1¾-in. hole. This cement is mixed thoroughly with water and poured into the drive pipe, care being taken that no lumps larger than ⅛-in. diameter are allowed to enter. The solids are given a short time to settle before backing up the drive pipe.

The workings have cut a number of holes treated in this manner and I know of no instance where we have discovered them leaking, whereas in workings where we have cut holes not cemented we have no end of trouble in plugging them in order to stop the inflow of water. We have recovered cement cores in pieces as long as three feet and with sufficient tensile strength to withstand breaking when ordinarily handled.

The drive pipe is measured as pulled and its length recorded by the engineer, in order to check and compare on the ground the driller's record of the amount of surface wash. Whenever possible the final survey location is made and the elevation is taken as soon as the holes are completed; otherwise a marker is set in the site after the drive pipe is pulled.

The core recovered from the vein holes is examined carefully by the engineer and an effort is made to express the driller's identification of the strata in terms by which the character of the rock may be determinable later. The inexperienced runner is prone to misreport a wet core, and, therefore, we recognize only six classes of rock; namely, pea conglomerate, hard sandstone, seamy sandstone, sand slate, slate and fine clay.

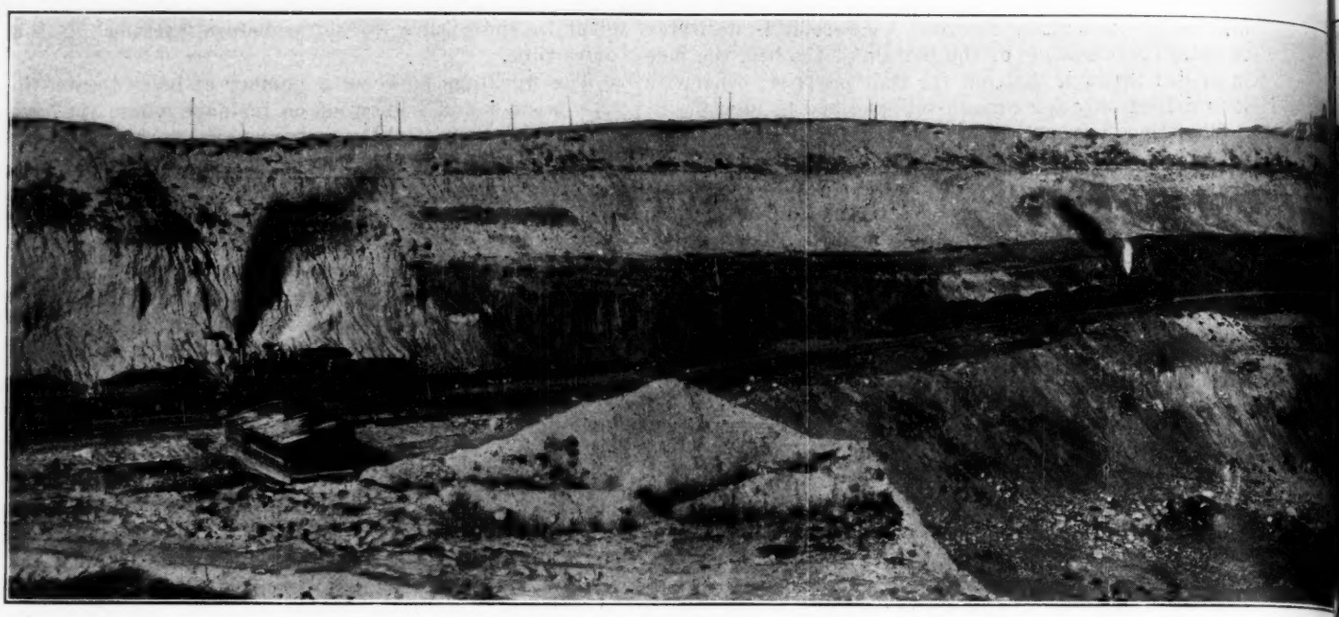
Much Care Used in Compiling These Records

The preliminary and final locations of the boreholes are referenced in the field and office notes by their serial numbers and by the calculated co-ordinate values, and the elevations are checked as soon as possible after completion. These data are entered in an office record book, specially prepared for this record. (See Fig. 2.)

Within a reasonable time after a hole is completed, the drilling contractor furnishes a record of the strata cut, as measured from the top of the drive pipe, stating the height of the drive pipe above the natural surface. This record is compared with the weekly reports, and the depth of wash and the total depth of the hole are checked with the engineer's measurements as entered in the office record. A columnar section is then drawn on tracing cloth to a scale of 20 ft. to 1 in. (See Fig. 3.)

Sufficient drilling having been completed, the engineer contours the rock floor of the valley in the area tested with a view to determining the existence of pot holes or abrupt ledges, and if the contours appear uniform and he is satisfied that no additional drilling is necessary he prepares to direct the workings forward to the approved limit. He first proves, absolutely, the correctness of his bed surveys and elevations and then provides the mine foreman with a print showing a preliminary safe stopping distance, referenced to a survey station, and instructs him to stop the breast or gangway at once should any abnormal pitch of the vein be encountered.

No working place is allowed to enter a block unless all four corners have been drilled. When a place reaches its preliminary stop distance, the foreman notifies the division engineer, and a level party is sent out to find the elevation of the normal roof at the most advanced point of the breast. If the roof is regular, the engineer can then usually determine from this the final stop distance of the place. A foreman experienced in driving to a rock-cover limit can so arrange his requests for final elevations and stop distances as to avoid any interference with his output. Surveys of places that are driving toward areas of shallow rock cover should be frequently extended.



THE SHENANGO IRON PIT IN THE MISSABE RANGE, MINNESOTA, EXHIBITS WELL HOW THE IRON INDUSTRY HAS

Coal Mining as Seen

Believes That Four Improvements Necessary: Mechanical Loading, at Points of Large Consumption, and Classification According to

By Arthur J. Mason

JUST before the war circumstances took me for the most part of a year into contact with coal mines and mining. I had passed a good many years in the steel business participating in the reform which changed the manipulation of the raw material used in steel making from hand work to machine, and had seen the cost of a typical unit act, such as unloading a ton of iron ore from ship, drop from 25c. a ton to 5c. or less. I had watched the slow sobering of the personnel in a plant as the introduction of machines took from the shoulders of the sons of men excessive physical work—so excessive as each night to leave a man in such a state that relaxation and entertainment could come to him only through the use of alcohol.

I had watched the process of picking out and promoting the brighter spirits in the crews to jobs calling for greater skill and thought and had noted the stimulating and uplifting effect on groups of men as they participated in bringing about a plan to do more and better work, each one, each day. Through such observation I have come to a firm and definite conclusion of the value of labor-saving devices to masses of hard-working men in elementary work, even though the first effect seems to be to run them out of a job.

Labor-Saving Devices of Primary Importance

Part of that conviction is the belief that there is no other procedure to raise the status of such groups but in labor-saving devices. Further, that the enormous economic advantages are not more important than the moral effects which contemporaneously and naturally flow from the use of such devices. Only through them can we lighten, sweeten and render more profitable the lives of the millions of men who now work out of sight in coal mines.

The poor Asiatic actually regards jealously a beast of burden as his competitor and rival. We will not go very far until we remove from down in the coal mine the obsession that steam and electric beasts of burden are competitors and rivals of men's bodies—the Asiatic view—and substitute the belief that these agencies are friends and humble aids just as much as domestic animals.

We are met to study the economics of the coal harvest. The viewpoint I am to take is that of an outsider. Not always does the onlooker see most of the game, but his view is bound to vary either from the coal operator, who is too close to the game and too interested in its habits, or the economist and statistician, whose mind dwells on the refinement of the existing order of things as set forth in recorded facts. The ore man first realizes the radical difference surrounding the art of ore handling as a stage of steel making from its kin the art of coal mining.

The steel business is dramatic; it has been very profitable; great fortunes, remarkable men, are associated with it in the public mind. Vast numbers of fine technically-trained young men seek it. Steel plants are adjacent to large cities; the personnel participates in the life of such places. It employs all the arts, and its work is easily translated into readable journalism. On the other hand, coal getting is essentially provincial. It is a dirty occupation; out of sight. It attracts a large number of simple-minded, vigorous men, largely of foreign birth, who from their isolated lives have small chance for what we call Americanization. This is not an unfair statement, and explains the fact that iron-ore handling has gone so far—has already achieved the reform in procedure which coal mining awaits.

The four great opportunities in coal production and use appearing to me are:

(1) Mechanical loading of the coal after the face is shot in the mine.

(2) The establishment of great storage piles at points of large consumption.

(3) Reform in use and distribution of coal at large cities.

(4) The classification of coal from its chemical and physical characteristics in the manner that wheat and iron ore is now classified.

I will deal with these four ideas in order.

The outsider with technical training and experience is astounded when he first comprehends the fact that nearly 700,000,000 tons of coal each year is shoveled by hand into mine cars in this country alone. It is to him as though we were to go back to spading our land in agriculture instead of plowing it. Let me try and visualize this work for you. The coal we burn in the months of January and February would fill up the whole Panama Canal. Who would contemplate that great work as a possibility with hand tools!

A million men in the United States, another million in

*Abstract of paper read before the American Economic Association at Atlantic City, Dec. 28, 1920.

OBTAINED BIG RESULTS FROM THE USE OF LARGE LOCOMOTIVES AND CARS FOR STRIPPING AND LOADING

by an Ore Engineer*

in Coal Production and Use Are Establishment of Storage Piles Reform in Use and Distribution, Chemical and Physical Features

the United Kingdom, pass their working lives down in the mine or near the pit mouth in the work of transferring coal from its long resting place into railroad cars.

Were it not for the peculiar psychology underground, were it not for the fact that this mining is dirty and its details unknown to society this matter would have been disposed of long ago. Give access to the mechanical ability of the nation, spread news of the need and opportunity, and the same kind of wit which dealt with the harvest will speedily and easily deal with coal.

I do not regard this problem as mechanical so much as psychological. In view of what we now do in other forms of excavation, I do not regard the job as especially difficult. My observation for the past forty years leads to the belief that intellectual and economical appeals, however logical, sound and fortified, make little headway unless accompanied by some moral and sentimental appeal.

Can one conceive a proposal more splendid than one to bring to the surface and the light of day 700,000 men to do some finer and better work, and to bring upward with them their families and dependents? One cannot escape the conclusion that mechanical loading of coal is the principal change necessary to do this.

The prices the miner receives so much referred to in our daily papers require him to bore the auger holes, furnish the explosives and pay for the cost of undercutting the coal by machine. After the explosion he must shovel the coal into cars. The cost of providing for the explosion, plus the cost of undercutting, amounts to about 15c. If the total paid miners be, as it is in Illinois, $1.04, then for the job of shoveling a ton of coal into a car the miner and his "buddie" get not less than 89c.

This is the particular act the wastefulness of which I would now emphasize. If in agriculture the land were prepared by such a primitive process, then either wheat would be worth $15 a bushel or agricultural labor be paid at a rate of not more than $100 a year, a sum much greater than is now paid in China, where such primitive methods do prevail in agriculture. The truth is that the mechanical genius of the nation has passed by this great opportunity unaware.

Is it just to the rest of us that this particular calling should remain so far behind? When one recalls the wonderful things done by labor-saving devices in the mighty aggregate effort of this nation each year, no sensible, reasonably-qualified mind can doubt that this work of shoveling can and will be done for a fifth of its present cost by machine, and at the same time everybody's job be lighter, pleasanter and more profitable, precisely as such has been the case with the changes in handling iron ore. Furthermore, the work of boring the auger holes and loading them with explosives will be better done by experts who do nothing else, just as the undercutting has already been relegated to experts, in whose hand the undercutting machines now do this work far, far cheaper and less wastefully than the old-fashioned miner, wielding a short sharp pick, could ever do it.

"Machine-Mined" Characterized as Misleading

Let me state here that when you hear of machine mining of coal it refers only to coal under which the slot has been made by machine. The expression "machine mined" is misleading. It is true that machines are available to do the major operation, but so far they don't do $\frac{1}{10}$th of 1 per cent of the loading, and their extensive use is always threatened by the natural mistrust engendered by an old-world attitude prevailing in the rooms of our coal mines.

I am about to state a most glorious fact, not much known, yet which often cheers the little groups of choice spirits in each art who have brought about the wonderful labor-saving devices at the bottom of our national success. That fact is that whenever we start up some bold and economical change in our work we almost invariably find collateral, incidental and unsuspected benefits as great as those we first had in mind. I will name one out of a mass.

When we undertook to handle iron ore mechanically, the great comprehensive tools brought forth enable the ore to be piled in such masses that we abolished winter. I will pass to contemplation of the collateral benefits necessarily flowing out of a system of complete mechanical mining of coal.

Roughly speaking, one may justly say that the operating cost of putting a ton of coal on a railroad car is twice the sum paid the miner. The half not paid him forms the cost of creating and maintaining in the mine local transportation, ventilation, drainage, light, search and safety, management, lifting coal to the surface, and general maintenance.

This whole group of costs varies directly with the underground area from which the coal is gathered. For my pres-

ent purpose it is a fair assumption to state that for each 1,000 tons brought up 100 acres below is provided with a labyrinth of entries, rooms, tracks, switches, ventilation devices, so that in a big mine, raising 5,000 tons, almost a section or mile square is so organized—a city underground, which utterly bewilders the novice on first acquaintance.

This area largely arises from the pseudo ownership which every miner acquires of his room or rooms, technically known as his place. This place he inhabits with his "buddie" and owns for perhaps a year. An unwritten charter has for a century given him rights which are sacred. He works, or does not work, like the rest of us, according to his health, his wife's health, national holidays, his interest in sports, his funerals, his marriages, his quarrels. The problem of supplying empties or taking away loads from his rooms or places, thus becomes a sort of game of chess, almost impossible of proper organization. From this the miner himself suffers most of all.

It is trite to say that progress at any point in a coal mine, like any tunnel, will proceed with the frequency with which a face is shot. I find that the room faces are shot in southern Illinois on an average about once in four days. If these faces were shot every day, it must surely follow that the area kept alive with all the agencies I have mentioned would be cut down correspondingly. That is to say, two and one-half acres become the equal of ten acres, and the cost of mining over what is paid the so-called miner would fall in much that measure.

Machine Loading Will Concentrate the Work

Machine loading will necessarily abolish the institution of places in coal mining. A group of six men with loading machine and gathering motor should average 100 tons of coal per hour loaded in mine cars and delivered to the general transportation system of the mine. This crew will proceed from room to room, with much the same sort of order that we follow in other work of a kindred character above ground. Machine loading will enormously concentrate the work. Inasmuch as there will always be a gathering locomotive in attendance, there will be hardly any limitation to the size of mine cars. They should rise to ten, or even fifteen tons, instead of two or three or four as a present average.

Throughout the procedure everyone will thing and act in larger units, and this is no small matter. Ten years ago in an earnest inquiry I could find no reason, nor could any of my expert friends on the ground find any, for the fact that coal in London, 250 miles by water route from two great coal fields, was $3.70 per ton f.o.b. cars, while coal in Chicago, 300 miles by rail, plus a terrible winter, was $2.30 f.o.b. cars—wages in Illinois being almost three times wages in England. No other reason, I say, but thinking and acting in our case in large units. The Englishman did his work in what I can find no other fitting expression for but a piddling way, his mine cars like baby carriages, his railroad cars hardly bigger than our delivery trucks. No one could pretend that English miners are inferior to our miners as miners. When they come here they hold their own. Yet they get but 250 tons per year against our 600 tons. Our surprise at this is only heightened when we find that the miner of the Steel Corporation doubles this figure again, and gets twice as much coal as the miner outside the Steel Corporation. There seems no limit to what a man can do when properly fortified by organization and tools.

Predicts Material Fall in Coal Production Cost

Having prognosticated certain things twenty years ago with success, I will go into the game again and prophesy that coal production cost at the pit mouth will fall two- or threefold within the coming ten to twenty years, and yield more profit to all concerned than ever before, excepting of course our last three years' spree.

The greatest economical waste in the coal situation is the waste of manhood—waste both physical and intellectual. Most of our miners come from a European environment—cruelly hard and lacking in opportunity. Life in the mine and a home in the vicinity do not afford what all good men most desire, an opportunity for prompt Americanization. Being isolated groups, often nationally coherent, forces are very strong to preserve the old world mentality and habits.

This situation is aggravated by the fact that coal mining has been allowed to become a seasonal industry, due to our severe climate and its caprices—my second great opportunity.

From the beginning our ore industry stopped each year with the freezing of the Great Lakes. We were forced to introduce storage systems, and out of them has developed a most astonishing group of effective mechanisms, which are ready to the hand of those manipulating coal. The intermittent characted of bituminous-coal mining is very demoralizing. I wonder how many men in this room would retain their equanimity did they live under circumstances wherein day after day, week after week, year after year, they could not forecast from day to day when they would work, how much they could work, bread and butter requiring that they must work.

Our soft coal mines have not probably averaged 200 days' work in the year. The difficulty has always been—what 200 days; no one could tell a week ahead. The obvious remedy for this is the storage pile at centers of consumption.

An Instance of Economical Coal Carrying

It is interesting to know that this system has long been in existence in dealing with the coal for our Northwest. Many millions of tons are carried annually by the returning ore vessels to Duluth and other points, and from there distributed as the demand arises. This coal has been carried a thousand miles for the last twenty years for something between 30c. and 50c. a ton—an economical achievement without parallel. Northwest practice has fairly abolished the bugbears of deterioration and of spontaneous combustion, save in very high sulphur coal.

The devices are available now in the car dump and the great storage bridge to put soft coal into stock, and take it out of stock, for something like a total of 10c. or 15c. a ton. The creation of a system of storage and equipment will give continuity to coal mining, but its collateral advantages will be even greater. No longer will railroad cars choke the great yards at division points, demoralizing prices and stopping traffic. The railroad will run its regular trains throughout the year to move the coal. No longer will the coal supply in our cities have its chills and fever as the weather varies. The severe winter storm not only suddenly causes a great demand for coal, it also brings conditions under which even a normal demand cannot be met.

It is an open secret that 0.4c. tariff per ton mile never was, or will be, a profitable figure for railroad transportation in our severe winter. There is every prospect that it will be profitable as a steady volume of business during the fine-weather part of the year. Moreover, a good deal of this ultra coal movement is contemporaneous with the transfer of the harvest. It is altogether desirable that these two maximum streams of transportation should be separated in season if we can do it.

I come to my third item: Reform in the use and distribution of coal in cities. We use about the same amount of coal per capita as England, say six tons each per annum. In our case a large modicum is used to meet a severe climate—that is, keep our bodies warm and commodities from injury; in short to promote comfort.

All of this fuel is very wastefully used. It is a safe statement to say it is burned at a rate corresponding to six or more pounds per horsepower hour, whereas it might be burned in large installations at two pounds per horsepower hour to effect the same result. This fuel is distributed to thousands and thousands of destinations by wheel vehicles along the streets, wearing out pavements and interfering with the traffic. In the same manner the ashes and partly-burned coal, amounting to one-eighth in weight, probably one-fourth in volume, are gathered and finally disposed of.

The primary saving which would ensue should municipalities undertake to furnish heat to the citizens, as they now do water, by means of great central stations, would reach a sum measurably equal to the present total taxation in those cities. The secondary saving, due to the absence of smoke, the prolonged life of carpets, wall paper, clothing, furniture, curtains, laundering, paint and a thousand directions, would, if justly stated, reach such a mighty sum as

CLOSER VIEW OF THE CORE OF THE SHENANGO PIT

It will be noted that the locomotives, cars and shovels, especially those in the foreground, are immense as judged by anthracite-stripping standards. Stripping cars in such pits have air dumps discharging either to right or left. The iron ore itself is loaded into standard 50-ton railroad cars built for discharging into chutes at the docks. The iron-ore pits are just beginning to use shovels such as are used for stripping bituminous coal, and they are being utilized not only to load overburden and waste rock but to load the marketable iron ore into full-sized railroad cars. Large stripping projects can be handled only by large equipment.

even to attract the notice and respect of one of our industrial boards in Washington during the late war.

A man in a city should no more be allowed to light a soft-coal fire in his house than he is allowed to maintain a private water supply in his back yard in the form of a shallow well.

The fourth major reform which the steel business suggests is the classification of coal from its physical and chemical characteristics.

Twenty-five years ago there were perhaps one hundred different varieties of iron ore on the Messabe range, each ore bearing the name of the mine—fondly supposed by the owner to have special merits. The Steel Corporation classified all this ore into five grades or groups. This act has enormously simplified the movement of fifty million tons. In the same way, our wheat loses its identity the moment it appears at a railroad. It then merely becomes so many bushels of No. 1 Red or some other grade. It would be impossible to move our harvest if the identity of each parcel of grain were preserved.

Further Economy in Systematization

The benefits which would accrue from a systematization of this character in coal would be very great, and ramify in many directions. Let me pick out one. The bulk of our coal in cities is delivered to team tracks and shoveled from the cars into wagons or trucks. I know of land in Chicago worth a half million dollars an acre devoted to such a purpose—a most wasteful use of car time, team time and land time. All this coal should at once be classified by disinterested officials, be mechanically unloaded by car dumps, elevated into great structures like grain elevators, and loaded by gravity into wheeled vehicles for distribution. The cost by such a plan would be an infinitively small part of the present cost, a vast amount of tonnage would be handled on a small area, and the railroad equipment released in a few hours instead of days.

Twenty-five years ago an empty ore car arriving at a Lake Erie port spent some four days before it departed as a weighed load for Pittsburgh. Today it is not a tenth of that time at good harbors. Perhaps you will visualize the saving of space when I state that a metropolitan elevator will store the grain contained in a train of railroad cars six miles long.

The classification of coal according to its genuine contents will protect the public in the same manner that statutes of our states protect farmers regarding fertilizers, throwing out of the game much bunk, clarifying the business and benefiting both producer and ultimate consumer. Today we are able on a dock front 600 feet long to do a volume of business in iron ore of over three million tons. Twenty-five years ago it took a frontage of a mile to handle half as much. The treatment of coal in cities is susceptible of improvement of the same order.

I have deliberately kept to the last two things which it seems must inevitably arise in coal mining when mechanical loading of coal becomes general, both due to the celerity with which a given area will be attacked and the coal robbed. The first one is its effect on safety in coal mining. The public mind is, from time to time, aroused over the story of some great calamity. It sees pictures in the newspapers showing hundreds of women with shawls over their heads, waiting for the bodies of their beloved to come to the surface. Not at such times, statistics show us, do the fatalities arise. The preponderance of fatal accidents comes from pieces of roof falling, not extensive, a few hundred pounds at a time.

Considers Complete Machine Mining Safer

Now every engineer knows that caving, whether in open cut or underground, is but a question of time—ground which is quite safe for a week is utterly unsafe in a month. It is plain to me that nearly all fatalities from local roof falling will disappear with complete machine mining. It is not uncommon to leave coal in the roof merely to strengthen it. I know of mines in Illinois where as much as 20 per cent of the coal is not taken out for this reason: to wit, the roof is not safe for a year without it, but if the same roof was only called on to stand a month, it generally would be safe without the reinforcement of two feet of coal left in place.

The second great collateral advantage I confidently predict as a consequence of rapid machine loading will come from the fact that almost all our bituminous coals may then be taken out by the longwall system, thus winning all the coal, not the dubious 70 per cent we now flatter ourselves with. If this be so, it means a beneficent revolution in all the stages of coal mining. For one thing, the longwall will abolish the dangerous and expensive robbing of pillars in all systems of stall and pillar mining, under which the most of our coal is won.

I find myself so often referring in the steel business to twenty-five years ago. This was the moment when the metallurgical side of the business had so far progressed that the technical groups turned their minds to the perfection of mechanical procedure. It is only just to say that the formation of the Steel Corporation, bringing together large numbers of highly-trained young men in friendly relation, who stimulated, aided, yet competed with each other, has perhaps been the largest factor in bringing about this burst of enthusiastic effort with its grand results to all of us.

The coal business is ripe for changes along the lines indicated in the same spirit—perhaps, too, the moment is opportune. Sadly we must admit we seem to be at the portals of a period of depression. Is this not the very moment to establish in our cities, on our railroads and in our mines the agencies for production to adequately meet the next wave of prosperity and demand? Indeed, will not such a program accelerate the coming of that happy time?

How Long Will It Take the Consumer to Boost the Price Of Coal, at the Present Rate of Production?

Charge That Producers Manipulate Supply to Force Up Prices Shown To Be Unfounded—Expense of Government Regulation of Industry Overlooked—Early Purchase and Storage Would Place Solution of Problem in Hands of Consumer

By Henry W. Gabell* and Dr. Henry M. Payne†

COAL is a necessity of which a certain minimum amount must be burned every year no matter whether the price is $10 or $1 per ton. Its consumption is highly inelastic and almost entirely unaffected by market conditions because a permanently low price has little effect on the total amount of coal consumed. A permanently high price has little effect on the amount consumed because there is no adequate substitute for coal. It might therefore be argued since we in America have a practically unlimited supply of unmined coal and since high prices do not decrease consumption nor do low prices increase consumption, competition should force the price of coal down to the cost of production. The law of supply and demand is commonly supposed to be unfailing in its operations. Why, therefore, should it sometimes fail with coal? It has failed time and again with coal in the last five or six years—the price of bituminous coal has skyrocketed every year, except when the government arbitrarily fixed the price.

This article deals only with bituminous or soft coal. Retail dealers and consumers of Pennsylvania anthracite or hard coal should not read into these statements a parallel to the situation with respect to that kind of fuel.

The consumer, who is the chief complainant on the high price of coal, naturally concludes that some one interested in the production and distribution of coal is arbitrarily blocking the operation of economic laws in order to fill his pockets at the consumer's expense. Public opinion has, therefore, indicted the coal trade for profiteering in a vital necessity, and it behooves the trade to answer the indictment.

The consumer's interest lies in getting the coal he must have at as near the cost of production as possible. Since the consumption of coal is inelastic, the producer's interest is in producing just enough coal to supply the demand. If there is temporarily an overproduction, competition forces the closing of a sufficient number of mines to balance demand, and if there is a short production the resulting higher prices attract new producers in the efforts to balance the supply. The huge untapped sources of supply, the variety of coals, and the great number of people in the coal business make it impossible for the producers or wholesalers of coal to control the price of coal in any way. Nevertheless, during the past two years coal has cost the consumer more than it should have.

The mere production of coal does not solve the problem. When a consumer buys coal he not only buys that which he burns but he also buys transportation. The coal he burns can be produced, but it must be carried from the mines to the consumer before it is of use. A coal shortage therefore is a shortage in delivered coal.

No matter how high the price of coal goes in times of emergency, it does not serve as an incentive to produce and deliver more coal, because no matter how greedy the producer may be, the absolute limit to the profit he can derive from the situation is the amount of coal that can be transported. The railroads, to whom that incentive should then naturally accrue, also are prevented from taking immediate advantage of it because the price of their service is definitely fixed by the government and is not free to follow the dictates of the law of supply and demand.

There can be little question of the absolute truth of the premises outlined above. They are based on the simplest laws of economics and should be thoroughly understood by the buying public. However, there is a widespread conclusion based on these premises, which is entirely incorrect. The consumer argues that since a shortage of delivered coal causes an increased price and since the railroads get no benefit from that increased price, the producer reaps the benefit and therefore endeavors to create a situation necessitating high prices. In further support of this conclusion the consumer introduces the premise that producers deliberately hold coal for speculative purposes in order to increase the difficulty of procuring it at its point of consumption.

Coal is a bulky commodity. The only storage space available for coal before it reaches the consumer's bins is in railroad cars. Any consumer of coal can readily determine how long it would be possible to hold coal for speculative purposes in railroad cars and still make money after paying the demurrage, for the collection of demurrage on a car of coal is as inevitable as death and taxes. Stocks of bituminous coal, according to the U. S. Geological Survey, have been as high as sixty-three million tons. Where has this sixty-three million tons been stored? In the only logical and possible place—the consumer's own bin.

Coal Not Usable Until Delivered to Consumer

It must be remembered that even if the coal has been mined and has been placed in railroad cars, it is of no usable value until it has reached the place where it is to be burned. In times of a transportation breakdown coal delayed in transit is neither a reserve insuring the consumer against a shortage, nor a reservoir in which the coal can be held until the price reaches that desired by the speculator. Granting then, that, compared to the total production of coal, it is highly impractical to withhold coal from the market for speculative purposes, there still remains the fact that the producer derives the benefit of high prices resulting from a shortage in the consumer's bin. Therefore it might still be argued that, although the producer does not attempt to withhold coal from the market, he welcomes transportation difficulties in order to increase his profit.

It must be kept in mind that the consumer's interest lies in obtaining delivered coal and that as long as he pays a reasonable price for that coal, he is entitled to get it. In contemplating his coal difficulties, therefore, he is inclined to look with suspicion on the man who benefits by his inability to obtain delivered coal, and this accounts to a great extent for the popular belief that the producer is not only desirous of bringing about a condition of affairs which will make it difficult to procure coal but that he goes out of his way to cause such a condition to exist. The consumer's general indictment of the producer on that account would indeed have some weight if it could be proved that the producer does profit by such a situation.

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Again applying the law of supply and demand, we find that although the actual consumption—the total quantity burned—has remained practically the same, being highly inelastic, in times of a railroad emergency the part of the demand that can be satisfied is restricted to the amount of coal that can be transported. It does not follow, however, that when the amount of coal that can be delivered has been restricted, competition becomes keener among the producers who are in position to supply that amount of coal, and that as a result the price would be forced down. The fact is that it is the consumer himself who forces up the price under such conditions.

During the past six months consumers of all commodities have conducted a determined and concerted campaign to reduce prices by refusing to buy. In the same way the price of any commodity can be forced skyward without regard to competition that may exist among producers, provided consumers insist on buying more of the commodity than there exists to sell. Therefore, although the producer of coal does benefit by a transportation tie-up or car shortage over which he has no control, the amount by which he benefits is strictly limited by the extent to which consumers will bid against each other for a fixed amount of coal.

Panic Prices Are Seldom of Lasting Benefit

The profit made on coal in a period of emergency is of no real and lasting benefit to the producer. In the first place, a panic market always attracts outsiders who have no legitimate excuse for dealing in the commodity and whose efforts are always destructive. The profit which these outsiders derive from such a situation always is a total loss to the consumer and to the producer, both because their ineffective attempts to break into a business of which they know nothing aggravates the transportation situation and because they lack the necessary stability and financial responsibility for any element of permanency.

In the second place, a panic market in a vital necessity such as coal can only operate to destroy good will, an asset of real and lasting value to any established business.

In the third place, an emergency of any sort is always needlessly expensive to everyone involved. Therefore, that excess which the producer is accused of appropriating to himself must be entirely dissipated in the fight for survival during the existence of the useless additions to the trade in rebuilding good will and defraying the expenses of the emergency. Hence, in the ultimate analysis, neither the railroads nor the coal producers derive any lasting benefit from a high-priced market and the consumers' indictment of the producer does not hold water.

On the contrary, does not the accuser become the accused? The railroads most certainly do not relish a tie-up and a high-priced market is of no benefit to the producer. Since both elements of supply are proved guiltless is not demand the only offender left? Supply and demand are the only two factors in any market which can determine price. Is it necessary to eliminate supply in order to convict demand? The consumers themselves are the only ones capable of preventing the offense of bidding against each other for deliverable coal which does not exist.

Can the Wholesaler Prevent Coal Panics?

But before the responsibility for high-priced coal can be definitely placed on the consumer justice demands one more explanation from the coal trade. Granting that high prices are the direct result of bidding for coal which cannot be shipped why does the coal trade permit that condition to exist? Is it not the function of the wholesaler, if not the producer, to prevent such panics?

In times of stress the first to bear the brunt of criticism is the wholesaler. The consumer naturally looks to the jobber for an explanation and relief. When neither is forthcoming, it is human nature to damn the wholesaler and let it go at that. The wholesaler is put on the defensive for a condition which has been brought about by the consumer, and still the consumer places orders with him to buy more coal at any price.

True, the wholesaler's commissions per ton jump from 5c. or 10c. in normal times to 50c. and more in times of stress, but the cost of his service to both producer and consumer increases. He has to increase his traffic staff, send men to the mining region to scout for coal in cars and, in all phases of his business, exert greater efforts to obtain the coal the consumer demands. Since he not only receives no lasting gain from the situation but must bear the brunt of the consumer's wrath as well he is more than desirous of avoiding a panic.

Good intentions, however, must bring results. The consumer is right in demanding reasonably priced coal, and if the coal trade cannot meet that demand the consumer is warranted in seeking a power that will. Government regulation is in the mind of every consumer today as the logical solution of the difficulty. Let the government fix the price of coal—make it unlawful for consumers to bid against each other—and the problem is apparently solved!

Government Regulation a Costly Expedient

But what a lesson we have had on the cost of government regulation! Everyone knows what it cost to build our merchant marine and operate our railroads. True, the cost of winning the war was cheap at any price, but can we continue to pay such prices in peace times? Glance at a map of our coal areas. Contemplate, for a moment, the amount of coal consumed every year—550,000,000 tons. In spite of the size of the undertaking no one will deny that the government can regulate the industry, but at the same time can anyone guarantee *at what price* it can be done?

The producer cannot solve this problem alone, nor can the wholesaler. If the consumer undertakes to invoke government regulation he is inviting even higher cost. Why pay any cost, either for a panic market or government regulation? *Coal is cheap now.* It cannot get much cheaper; certainly not enough to warrant running the risk of waiting until bins are empty and coal is in demand. The railroads can carry coal today, and if the load is distributed over a reasonable period of time, their difficulties will be minimized. Fill bins now while they can be filled and with cheap coal as well. The railroads themselves say that they cannot possibly avoid another transportation crisis next winter. Therefore the cheapest possible way of avoiding another panic with all its attendant evils is to buy deliverable coal now when coal is cheap and transportation available.

Shipments of Anthracite Receded in March; Falling Off Attributed to Mild Weather

SHIPMENTS of anthracite in March, as reported to the Anthracite Bureau of Information, amounted to 5,737,771 gross tons, as compared with 5,966,101 tons during the preceding month of February, and 6,077,821 tons in March, 1920. The decrease last month is generally attributed to the abnormally mild weather of the preceding winter and of the month itself, and to the policy of consumers of holding off purchasing for future needs on account of uncertainty as to prices which might be put into effect at the beginning of the new coal year, April 1. Many consumers of anthracite had sufficient supplies on hand to carry them over the month, and by far the larger part of the shipments made was stocked in the yards of dealers and not distributed to their customers.

The total shipments for the coal year ending March 31 amounted to 69,366,731 tons, as compared with 69,815,034 as reported for the coal year ended March 31,1920, a decrease of 448,303 tons, which, considering the mild weather of the past winter, is remarkably small.

Shipments in gross tons by originating carriers were:

	March, 1921	February 1921
Philadelphia & Reading	1,018,858	1,170,753
Lehigh Valley	1,022,714	1,063,508
Jersey Central	540,556	515,551
Lackawanna	1,020,381	920,788
Delaware & Hudson	837,644	813,191
Pennsylvania	333,687	426,350
Erie	561,013	633,706
New York, Ontario & Western	144,930	153,017
Lehigh & New England	257,988	269,237
Totals	5,737,771	5,966,101

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

WILLIS H. BOOTH, vice president of the Guaranty Trust Co. of New York, recently returned from a three-months' trip through the leading commercial countries of Europe, is of the opinion that, in spite of the difficulties the European commercial and financial situation obviously presents, the recuperative powers and the industrial will-power of the peoples of Europe still remain unimpaired and he states that in no country did he find the spirit of despair which the hardships under which they are suffering might not unnaturally produce.

In commenting upon the situation generally Mr. Booth said: "One of the most reassuring factors in Europe today is the rapid recuperation of the French people from the effects of the war. This is evidenced by the turn in their trade balance last month, which, for the first time in years, was favorable to France. Of course, the great outstanding problem today is the situation in Middle Europe, particularly in Austria. The problem of how Austria's needs are to be financed is the deep concern of England and France, and so far no effective method has been devised. The Russian situation, of course, then presents the most critical aspect in Europe. Until Russia, either as one country or many countries, is restored to orderly economic life, there can be no sustained prosperity in Middle Europe. Germany is marking time pending some decision on the reparations question. England is in a state of industrial unrest, the outcome of which it is difficult to foresee. Until her labor conditions are stabilized it is certain that England will not be able to function efficiently in either commerce or industry."

Willys-Overland Output Growing

There are now 4,000 men at work at the Willys-Overland Co.'s plant at Toledo, Ohio, according to vice president Charles B. Wilson. General upbuilding of this force will continue, and it is expected that 6,000 men will be on the payroll by May 1. Production is also increasing at the Willys-Overland plant. Orders are coming in so satisfactorily now, Mr. Wilson says, that the working time has been increased from four to six days a week, which is equivalent to adding an additional 2,000 men on the old basis. It has been necessary to increase production schedule again to meet sales requirements. Dealers are reporting increased business in various parts of the country, and the company is looking forward with optimism to the recovery of business in general.

Jersey Central Shops to Open

Workers in the shops of the Central Railroad of New Jersey at Elizabeth, N. J., were expected to return to work April 18, according to a report following an announcement April 13 by C. E. Chambers, superintendent of motive power, that the shops would be reopened. The shops were closed seven weeks ago when the road announced that it could no longer pay the current scale, and it was said that the men probably would accept the cut.

Youngstown Steel Mills Speed Up

Steel mill operations in the Youngstown district were increased last week, particularly in sheet and tin mills. The spurt is said to be due principally to insistence of small buyers on quick deliveries. The Trumbull Steel Co., at Warren, increased the number of operating sheet mills from six to seventeen, and the Falcoln Steel Co., of Warren, which was closed two weeks ago, opened seven sheet mills. The larger steel plants show slight gains.

Missouri Pacific Shops Shut Down

The Missouri Pacific R.R. shops at Sedalia, Mo., with the exception of the storeroom department, closed April 7 for an indefinite period. Twelve hundred workers are affected.

New Prices Stabilize Steel Trade

Leaders of the iron and steel industry expressed their approval of the price reductions put into effect by the United States Steel Corporation, agreeing that the new schedule should have the effect of stabilizing quotations by all the manufacturers. Prices of the principal independents and the corporation are now practically on a parity as the result of the action announced April 12 by Elbert H. Gary. Opinion is by no means unanimous, however, that the placing of all steel prices on the same level will attract a large volume of new business immediately. The chief obstacles to a revival of industrial activity, asserted the vice-president of a leading independent manufacturer of steel, are the present tax system, high freight rates and the big wages paid in the building industry. Lower prices, according to his view, while acting as a stabilizing factor, will not attract a great amount of new orders.

Factory Work Gains in New York

A slight improvement in the number of factory workers employed in the State of New York during March was shown by the report of the State Industrial Commission made public April 12. The gain was one-half of 1 per cent. greater than February, which also showed an increase. The small gain was largely the result of seasonal activity, the industries showing increases mainly being those engaged in the manufacture of building materials, wood products, wearing apparel and food articles.

Canadian Steel Plant Closes

Officials of Armstrong Whitworth of Canada announced April 13 that the concern's plant at Longueil will be closed because of failure of the Dominion government to give tariff protection to manufacturers of locomotive steel tires. The company, which also made high speed and carbon tool steels, is a branch of the great steel firm which operates the Elsick yards on the Tyne, England.

Tin Plate Mill Closes

Orders having been issued to shut down the entire plant of the American Sheet & Tin Plate Co., at Sharon, Pa., the sheet mill suspended operations Saturday, April 9, and the tin mill Wednesday, April 13. About 2,500 men are affected.

Durant Motor Co. Incorporated

A charter was filed at the State Department at Dover, Del., early this month for Durant Motors, Inc., with an authorized capital of $100,000,000. The company is authorized to manufacture and dispose of automobiles of all kinds.

Problems of Operating Men

Edited by James T. Beard

Coal Loading Machines, a Type of Progressive Mining

Many Instances on Record Prove Development and Progress in Mining Require Co-operation. Manufacturer and Operator Equally Responsible in the Attainment of Success Where Improved Methods and Equipment Are Involved

READING the letter of C. R. Stahl, *Coal Age*, Feb. 17, p. 319, has drawn me out of my shell. If the preponderance of opinion of the great army of mine managers was in line with the ideas expressed by Mr. Stahl, regarding the development of improved mining equipment, the fact would prove a discouraging feature in the manufacture and introduction of improved machines in mines.

It is encouraging to know that those who are in closer touch with the situation and alert to the present needs in coal mining are both expectant and tolerant in their attitude toward this era of mechanical coal-loading, which they regard as rapidly approaching, though there is undoubtedly much yet to be done in the way of development.

It is indeed interesting to speculate as to where the coal-mining industry would be today if everybody had proved a standpatter. Mr. Stahl argues that "if a machine cannot go into a mine worked under these conditions (the development of centuries) and demonstrate its superiority it is not a machine that is wanted and will not prove a success."

What Has Been the Record of Past Improvements?

To accept this statement would be to practically eliminate every great advance in mining and block the course of progress. Did the electric locomotive replace mule haulage without changing the conditions determined by previous practice? Was it a violation of good practice to replace 16-lb. iron with heavier rails, on the main haulage roads, and locate partings at strategic points for locomotive haulage?

The stringing of wires along mine roads and passageways in order to conduct the power needed for the operation of electric coal-cutters working at the face was a radical departure from the practice of centuries; but it would be difficult to find a mine official today who would condemn this innovation in established methods in mines.

Indeed, instances galore could be cited to prove the stupidity of believing that a mechanical device must be capable of operating under conditions as they exist in order to be a success. Arguments such as these prove a lack of acquaintance with the work of designing and perfecting mining machinery.

The manufacturer knows better than anyone else that a machine in operation must produce sufficient revenue to make the investment a profit to the operator who is to purchase and install the machine. Coal-loaders are no exception to this general rule. The design is to promote economy in the loading of coal at the working face.

Co-operation Needed

In the article that started this discussion, N. D. Lavin emphasizes the necessity of co-operation in the work of making loading machines a success, *Coal Age*, Dec. 30, p. 1321. It is a reasonable request and one that no thinking person would refuse. The following instance will show how helpless is any machine without the exercise of foresight and interest on the part of the operator.

Some time since, a coal-loading machine was shiped by request, to a certain mine. It had hardly been installed a week when the complaint came back that it was difficult to keep it running. The suggestion that, owing to possible defective bonding, the voltage at the machine was low met with a prompt denial by the operator.

It so happened, however, that similar trouble was experienced in other sections of the mine and the company had ordered an additional generator, which was installed after a delay of six weeks. In the meantime the loader was standing idle. But, to the surprise of the operator, the additional generator gave no relief and the request for a voltmeter reading at the machine was at last reluctantly granted. The reading taken showed a pressure that varied from 140 to 160 volts, instead of the 250 volts required for successful operation.

It was at once apparent that the loss was in the defective bonding as first claimed. Let me suggest here that no manufacturer transcends his rights when he protests against the recurrence of conditions unfavorable to the successful operation of his machine. Co-operation is essential if the results are to be obtained that will make the machine a profitable investment.

To show the amount of preparation necessary in a mine adapted to the use of a loader I will cite the case of a machine that, on arriving at the mine and being unloaded, traveled under its own power from the mine entrance to the working face in 45 minutes and 15 minutes later was loading coal into the mine cars.

No preparation was made in advance to enable the machine to work. This is not an exceptional case but illustrates how well the machine is adapted to its work. On another occasion the same machine, after loading the coal at the face of one room, traveled through the crosscut and started to load the coal in the adjoining room in less than 5 minutes. The only work necessary to enable the machine to move, in that case, was the resetting of a few posts.

It is true that this was done by a machine working in the Pittsburgh seam where the conditions are admittedly more favorable than are to be found in the Buckley seam where Mr. Stahl has charge. The citation, however, serves to emphasize the fact, which is as true in mining as in many other things, that our fears are often greater than the actual realization.

Pittsburgh, Pa. E. N. Zern.

Oxygen Cylinder, Rescue Apparatus

American manufacture of oxygen cylinders for rescue apparatus is not surpassed in strength and utility by any foreign make.

KINDLY permit me to refer to a misstatement of facts that was made in an article describing a type of breathing apparatus recently designed under the direction of Dr. Henry Briggs, Edinburgh, Scotland. The article appeared in *Coal Age*, Jan. 6, p. 3. In describing the oxygen cylinder the author gave the following data pertaining to the dimensions, capacity and weight of the cylinder:

"The oxygen cylinder is made of a high-grade carbon steel and is constructed to Dr. Briggs' specifications. It is 13 in. long and 4½ in. in diameter, with a capacity of 290 meters at a pressure of 120 atmospheres and 360 meters at 150 atmospheres. It weighs, exclusive of the valve, 7 pounds."

After reading this statement I became skeptical as to its correctness. Believing that there is no such light cylinder on the market, I took the trouble to ascertain where the cylinders of the Briggs apparatus are made.

My correspondence with the manufacturer elicited the fact that they specify a weight of 10 lb., exclusive of the valve, which corresponds very nearly with the weight of cylinders of the same capacity made in this country. The total weight of these cylinders, including the valve, is stated as about 14 pounds.

Knowing that *Coal Age* would appreciate the interest taken by American engineers and manufacturers in the matter, I am giving this information in order that no one may be led to think that our manufacturers are not obtaining the best equipment possible for use in this important type of equipment.

JOHN S. BOARDMAN, Safety Engineer,
Anaconda Copper Mining Co.
Butte, Mont.

Make the Mines Safer

Prevention better than cure. What are we doing to increase safety in mining work? We preach safety-first, but do we follow up the admonition by what we advocate in practice?

ALLOW me to offer a few comments for consideration relating to the efforts made or that should be made to increase mine safety. On approaching or entering a mine one is confronted with conspicuous signs "Safety First."

Would the question cause any surprise if I ask, How many miners read these signs. daily, and what impression do they make on their minds? Is not the common thought, "Oh, that is for the other fellow—the man who is careless or the follow who does not think."

SMOKING CIGARETTES AND PIPES DANGEROUS IN MINES

In the issue of *Coal Age*, March 10, pp. 453, 454, appear a number of letters giving the thoughts of writers on the danger of smoking cigarettes or pipes in the presence of gas. But, let me say, this danger does not cease with the smoldering end of a cigarette, or the glowing tobacco in a pipe, but involves the lighting of these. To smoke either the man must light them first, and the question is, "What with?"

Speaking of the oft repeated injunction and the preaching of safety-first by word and sign, let me ask would it not be better to substitute for this well worn slogan the admonition, "Prevention is better than cure."

Take the subject of lighting in mines, of which I am reminded in looking over again the account of the Minnie mine explosion that I prepared for *Coal Age* and which was published in the issue Feb. 10, p. 267. It was thought by some that the cause of that explosion was a defective safety lamp:

Following a disaster of this kind it is usual to collect what lamps can be recovered from the mine and test them experimentally to ascertain if they are defective. The results show that it is rare if such tests prove anything, because the tests are not made under conditions similar to those to which the lamps were subjected in the mine.

In the testing of the lamps that were recovered from the Minnie mine no foreign coal dust was introduced into the testing gallery, nor were there any conditions created that would represent or correspond to the shock or concussion of air, which always accompanies a heavy fall of roof in a mine.

We all know that these conditions have a powerful effect to cause the failure of a lamp of an approved type, though the lamp may have no defect that would be manifested in an ordinary laboratory test. For this reason we should realize that tests of this character mean little and prove nothing unless we can duplicate more nearly the conditions existing in a mine at the moment of explosion.

Now, a word in regard to arresting an explosive flame so as to prevent the propagation of a local explosion in a mine. It would seem that too much faith exists in respect to humidifying the mine air by steam or by spraying in one form or another.

INVESTIGATIONS MADE BY THE BUREAU OF MINES

Allow me, here, to refer to the investigations made by the Bureau of Mines, the results of which were published in Bulletin 83, entitled "The Humidity of Mine Air." The bulletin states (page 16) as follows:

> The result of these experiments indicated that slight dampness of the dust was not sufficient to prevent flame propagation by an explosion, but that there could be no propagation when the total moisture content of the dust approached 30 per cent.

Another reference to the wetting of coal dust is made in Technical Paper 84, also issued by the Bureau of Mines, where it is stated (page 10):

> Merely moistening coal dust is not sufficient. The dust must be so wet that dust particles will stick tightly to surfaces or stick together, a test of which is whether the wet dust is plastic when molded in the hand. This means that if the coal dust is fine and pure it must contain at least 30 per cent (of the weight of the dust) of mechanically held moisture.

SAFETY IN STONE-DUSTING

The paper is entitled "Methods of Preventing and Limiting Explosions in Coal Mines." Besides the reference just quoted, there is given far more valuable information relating to the method of rendering coal dust inert by the admixture of stone dust, of which George S. Rice, chief engineer of the Bureau of Mines, is a strong advocate.

Referring again to the Minnie explosion, I believe that the fireclay floor in that mine had a great effect in limiting the explosion to a comparatively small area. It is worthy of note that the damage to empty cars standing in the entries was very small, which shows to what extent the force of the explosion was reduced. In most cases the cars would have been blown to matchwood.

In closing allow me to ask if it was a departure from the safety-first order when the overman (foreman) allowed his men to work on the return-air side of a weighting goaf?

JAMES ASHWORTH,
Mining Engineer.
Livingston, Alta, Canada.

Sealing a Section to Be Avoided

Future trouble often the result of sealing off a section of a mine generating gas, especially where mine creep develops.

REFERRING to the letter of Stephen Arnott, *Coal Age*, March 3, p. 409, I was particularly interested in his statement that a creep developed in the section of the mine in question and threw an enormous pressure on the room and entry pillars.

Any one who has witnessed the effects of a creep in a mine will agree that great heat is often generated, raising the temperature of the mine air and making the workings very warm. In addition to this, much gas may be liberated from the strata. To my mind, these conditions have an important bearing on the pulsation observed in the breathing of the sealed section mentioned

However, without going further into this matter I want to suggest that trouble is often laid up in store by sealing off great or small areas in a mine, for the purpose of isolating sections generating gas. This is especially true where the mine is subject to creep. It has always been my practice to keep these abandoned places open and ventilate them by circulating air through them as far as possible.

CREEP STARTED THE TROUBLE

In his letter Mr. Arnott states that the roof slate underlying the so-called "steel band" would hardly average more than 3 ft. in thickness. It was stated previously that this section generated large quantities of gas when the roof slate broke to the steel band. But, according to Mr. Arnott, there was no trouble of this kind, until the development reached room No. 10, when creep started and crossed the barrier pillar and threatened the main haulage road.

Now, though not acquainted with all the conditions in this case, it seems to me that it would have been better to have pushed the intake air into that section to a degree sufficient to insure good ventilation. It might even be well to drill holes from the surface for the purpose of draining off the gas. At the same time everything possible should be done to draw the pillars even at an extra cost.

My experience is that seals, say from 1 to 5, or 1 to 65, may be built with extra care and may stand indefinitely, being examined daily. Then, suddenly, a leak will develop that is hard to find and from that time trouble begins. This is especialy true where the mine is subject to creep, as appears to be the case in this instance.

Gans, Pa. R. W. LIGHTBURN.

Inquiries Of General Interest

Forge and Equipment of a Mine Repair Shop

The Up-To-Date Mine Repair and Blacksmith Shop of a Large Mine Must Be Planned and Equipped for the Work That It Is Expected to Handle. Wherever Available, Electric Power Will Generally Be Found Better Adapted and More Serviceable Than Steam

WE have in contemplation the building of a brick forge and repair shop. The forge is to be equipped with an electric blower and must be adapted to handling all blacksmith work, including the repair of mine cars, sharpening of machine bits, also the picks and drills of the miners and other work connected with the mine.

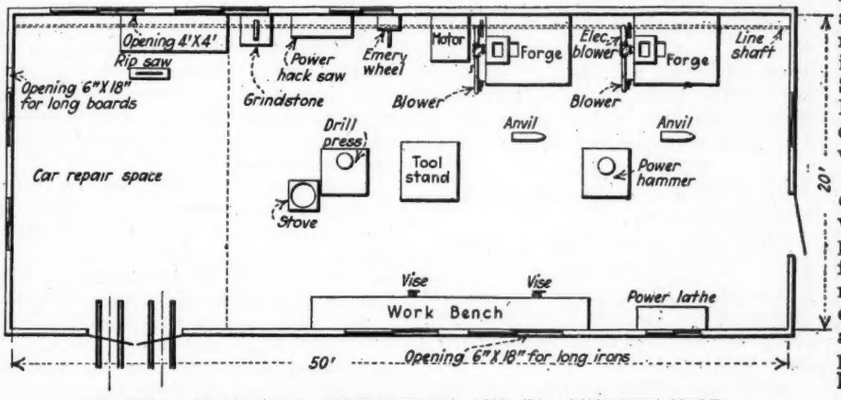
While we are familiar with the usual style and construction of a brick forge, filled in with earth, which is to be seen at almost any mine, I believe that the problem of the most desirable design of a forge of this kind has been worked out, at times, and shall be glad of any suggestions along this line.

R. B. DENNIS, Pres.,
The Morgan Run Coal & Mining Co.
Coshocton, Ohio.

In answer to this inquiry, which is an interesting one, we are glad to be able to give the general plan of a repair and blacksmith shop located at one of the large mines in Pennsylvania. The plan and description of equipment have been kindly sent us, by the general manager of the company, at our request. The statement is made that both the plan and equipment of such a shop must necessarily vary to conform with local requirements at a mine and the kind of work to be handled.

In Fig. 1 is shown the general plan of the shop and location of the machines commonly required in the repair work to be done at a mine. It will be observed that a line-shaft, running the length of the shop on one side, supplies power to the ripsaw, hacksaw, grindstone, emery wheel and blowers for the forges.

In this arrangement, other machines such as the drill-press, power-hammer and lathe are operated by a jackshaft belted to the main power shaft. The position of these machines in the shop is immaterial; they can be located to suit the convenience of the operator. The plan shows a heating stove to supply the necessary warmth in winter, unless the shop can be heated by exhaust steam from the powerhouse, which is desirable.



GENERAL PLAN OF A MINE REPAIR AND BLACKSMITH SHOP

The space shown in this plan as devoted to car-repair is unusually small, being 14 x 20 ft., though it is stated that it has proved ample for the repair requirements of 450 mine cars, which are old enough to have reached the stage of a uniform average in mine operation. These cars are small and light, having a capacity of ½ ton, 750 lb. tare.

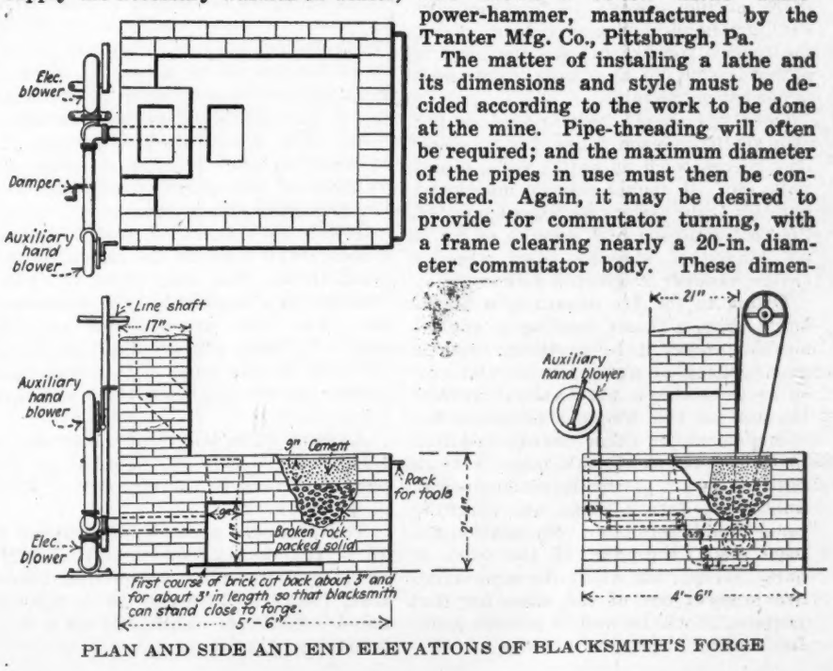
Larger cars would require more space and a winch; or, possibly, a light traveling crane could be installed to expedite their handling. At any time, additional space can be provided by extending the end of the building. One or two tracks, as desired, can be made to enter the door at the side; or a door can be made in the end of the building to suit the particular conditions.

Where much work of the kind is required a shop may be equipped with a large standard machine, combining rip and crosscut saws, a 6-in. joiner, 12-in. sanddrum and boring equipment. Such a machine is manufactured by the Parks Ball-Bearing Machine Co., Cincinnati, Ohio. A small power hacksaw will be found useful.

It is important to provide openings of sufficient size in the shop walls, wherever they are necessary for the purpose of running out long boards from the saw, or handling long irons or rails in forging or other work. Experience will generally show that it is advisable to equip the shop with a light power drill-press, in preference to a hand-power press.

While blacksmiths keep their regular tools that are in constant use hanging on the rack built into the forge, there should be a tool-stand, located at a convenient distance from the forge, on which special tools can be kept that are less frequently used. In the plan is also shown a 50-lb. "Little Giant" power-hammer, manufactured by the Tranter Mfg. Co., Pittsburgh, Pa.

The matter of installing a lathe and its dimensions and style must be decided according to the work to be done at the mine. Pipe-threading will often be required; and the maximum diameter of the pipes in use must then be considered. Again, it may be desired to provide for commutator turning, with a frame clearing nearly a 20-in. diameter commutator body. These dimen-



PLAN AND SIDE AND END ELEVATIONS OF BLACKSMITH'S FORGE

sions are fairly large, but the strength requirements are moderate.

Electric-welding equipment may be desirable and the work will often need to be finished in a lathe, without which the utility of a welding equipment is much reduced, except in the case of rail-bonding where lathe work is not required. In case much pumping is necessary in the mine, a power bolt-and-piper threading machine will be found useful.

In respect to the construction of the forges, shown in Fig. 2, in plan and side and end views, the thickness of the walls surrounding the forge should be two bricks, of good quality. The space within is filled with rocks broken to a uniform size and packed solid. As shown in the figure, a clean-out opening is provided under the duck-nest and in an up-to-date shop, a convenient tool rack is built into the end of the forge where it will not interfere with the blacksmith in his work.

An important point in the building of a forge is to provide a recess in the brickwork, at the floor line, by setting the first two courses of brick back two or three inches at the place where the blacksmith stands, on the side of the forge. The blacksmith is then able to handle heavier material to better advantage as his toes will not then strike against the bricks. The duck-nest and the tuyeres required can be secured from the Buffalo Forge Co., Buffalo, N. Y.

In forgework, an important part of the equipment is an electric blower located at a convenient point close to the forge where it can be controlled at will by the blacksmith. For this purpose, a No. 1½ electric blower such as manufactured by the Champion Blower Forge Co., Lancaster, Pa., will generally serve every purpose.

While a blacksmith is too expensive a man to require him to devote his time to turning the crank of a hand-blower, there should always be installed an auxiliary hand-blower on at least one of the forges, for use in case the electric power is shut off at a time when work is needed in the mine.

Openings should be provided in the shop walls, at each forge, for handling long pieces, such as switch rails, pipes, rods, etc. It should also be mentioned here that the rafters or truss-beams of the roof must be high enough to be in no danger of striking them when a sledge hammer is given a full swing.

Owing to the fire hazard in a blacksmith shop, a frame building is not desirable, unless it be protected with a good coating of gunite, inside and out, so as to render it practically fireproof. Because of the frequent necessity for enlargement, or other change required in the development of a mine, a brick building is not generally recommended, unless the future plans are carefully considered beforehand. No mention has been made, thus far, of the work of horseshoeing; but where the mine mules are brought out of the mine for that purpose, it will be well to provide space for shoeing them, in the shop.

Examination Questions Answered

Miscellaneous Questions Asked at Anthracite Examinations

Answered by Request

QUESTION—*How much water will be discharged by a pump having a water-end 10 in. in diameter, a 4-ft. stroke, and making 48 strokes per minute? If the lift on this pump is 60 ft. what will be its horsepower?*

ANSWER — The sectional area of a water-end 10 in. in diameter is $0.7854 \times 10^2 = 78.54$ sq.in. For a stroke of 4 ft., the piston displacement is $4(78.54 \div 144) = 2.18$ cu.ft. per stroke; or $48 \times 2.18 = 104.64$ cu.ft. per min. Then, assuming an efficiency of 85 per cent in the water-end, the quantity of water discharged by this pump is

$$Q = 0.85(104.64 \times 7.48) = 665+ \text{ gal. per min.}$$

For a lift of 60 ft., the effective horsepower required is

$$H = (665 \times 8\tfrac{1}{3} \times 60) \div 33{,}000 = 10+ \text{ hp.}$$

Assuming 75 per cent as the efficiency of the steam-end of this pump, the power required to drive the pump is $10 \div 0.75 = 13\tfrac{1}{3}$ hp.

QUESTION—*What are the advantages and disadvantages of electric lamps used by miners?*

ANSWER—An electric cap lamp gives a better illumination, is more portable and needs less attention than a safety lamp, while being at the same time safe in an explosive atmosphere. The electric lamp gives no smoke, is clean and its power is more easily replenished. The lamp requires less care in its preparation than a safety lamp. An electric lamp will continue to burn in an atmosphere that would extinguish any other lamp. The practical disadvantage of an electric lamp is that it gives no warning of the presence of explosive gases or poisonous gases.

QUESTION—*An arched tunnel is to be driven 10 ft. high to the crown of the arch, 10 ft. wide and 1,000 ft. long. The arch is a semicircle 10 ft. in diameter. Two bids are received for the work: "A" bids $70 per lineal yard and "B" bids $7 per cu.yd. To which contractor would you give the work and why?*

ANSWER—The length of the tunnel is $1{,}000 \div 3 = 333\tfrac{1}{3}$ yd. A's bid, at $70 per lineal yard is, therefore $70 \times 333\tfrac{1}{3} = \$23{,}333\tfrac{1}{3}$.

The sectional area of this tunnel is $(5 \times 10) + \tfrac{1}{2}(0.7854 \times 10^2) = 89.27$ sq.ft., and its cubic contents is, therefore, $(89.27 \times 1{,}000) \div 27 = 3{,}306\tfrac{8}{27}$ cu.yd. At $7 per cu.yd., B's bid is $7 \times 3{,}306\tfrac{8}{27} = \$23{,}144\tfrac{2}{27}$.

The bid should be given to B, other things being equal, since the difference is $\$189\tfrac{7}{27}$ in favor of B.

QUESTION—*If the barometer stands at 28.4 in., what is the pressure on a square inch?*

ANSWER — The atmospheric pressure corresponding to a barometer reading of 28.4 in. is $28.4 \times 0.49 = 13.916$ lb. per sq.in.

QUESTION — *What precautions would you suggest as being necessary to be adopted at a colliery, inside and outside, where electric haulage, pumping or lighting systems have been installed, and what voltage would you prefer for the several kinds of work?*

ANSWER — All power lines for transmitting electric power to the face or other points in the mine should be thoroughly insulated. Trolley wires must be protected at all points where men are liable to come in contact with the wire. Where it is necessary for men to travel a haulage road, the trolley wire must be carried on the opposite side of the roadway from the clearance space required by law. All electric installations should be made by a mine electrician and the wires supported by proper hangers. Circuit-breakers should be provided at the mouth of each section or district so as to enable the current to be cut off from that section when not required for haulage or power at the working face.

The voltage of electric currents in mines should not exceed 250 volts, except for the transmission of power on an insulated cable, to points inside of the mine, where the high voltage is reduced before being used in the operation of the machines. Electric installations should not be made in mines generating gas in dangerous quantity, requiring the use of safety lamps.

QUESTION—*How would you plan or lay out a mine having three splits of the Mammoth vein and the Skidmore vein in order to mine a maximum output?*

ANSWER — The work in each seam should be laid out in panels measuring 1,000 ft. on the gangway. By making the Skidmore seam the main haulage road, it will be possible to mine out the three splits in the Mammoth seam on the advancing plan, which will greatly reduce the cost of maintenance of haulage roads. The panel system of mining will insure the largest possible extraction of the coal and avoid danger from roof falls and bad ventilation.

Foreign Markets and Export News

Shanghai Market Becoming More Active

Resumption of busines sactivity in Shanghai followed the China New Year, according to Wheelock & Co.'s coal market report, dated Feb. 24. There is a better inquiry for Japanese coals. Prices for lump coal in Japan, however, are still much too high for buyers' ideas, especially at the present rate of exchange. Dust coal, being cheaper, is easier to negotiate. Fushun and Kaiping coals are unchanged, with very little fresh business to report. Stocks of the latter are much below the average and demand for the better grades is in execess of the supply.

Fu Chung spot coal stocks have been increased, a brisk demand has sprung up and a fair business is being transacted.

Coal prices are quoted as follows:

	Taels per Ton ex Wharf
JAPAN COAL	
Miike lump, Miike small, Miike dust	Contracted for
Kishima lump	16.00
Shakano lump	15.00
Arate lump	14.00
Shimoyamada Kirigomi	13.00
Shin Shakano	13.00
Yoshinotani No. 1 lump	14.00
Yoshinotani No. 2 lump	12.00
Ochi lump	14.50
KAIPING COAL	
No. 1 lump	Contracted for
No. 2 lump	11.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	8.50
No. 2 slack	8.00
FUSHUN COAL	
Dust	11.00
Kirigomi	No stock
Lump	No stock
FU CHUNG (ANTHRACITE) COAL	
Nos. 1, 2 and 3 Cobbles	14.00
Boiler coal	13.50
Dust coal	9.50

Austria's Coal Supply in 1920 Increased 700,000 Tons; Coke Scarce

Special Correspondence to *Coal Age*, Vienna

Austria's coal supply during 1920 amounted to 6,500,000 tons, of which 2,500,000 were raised at inland collieries while the remaining 4,000,000 tons were imported, the principal sources of supply being Upper Silesia, with 2,500,000 tons; Czecho-Slovakia with 500,000 tons, and the rest Bohemian and Polish pit coal and lignite. The total 1920 supply shows an increase of 1,700,000 tons over 1919, imports alone having increased by 1,300,000 tons.

The coke supply leaves much to be desired. As Austria produces next to no coke, practically the entire supply has to be imported. The normal demand for coke is estimated at 100,000 tons per month, the quota for the different industries being calculated as follows, in tons:

Iron and metal industry	65,000
Cement works	4,700
Household coke (Vienna)	5,500
Household coke (Provinces)	16,000
Chemical industry	1,900
Traffic and transportation	600
Miscellaneous	6,300
Total	100,000

Supplies during the past year fluctuated, however, around only 20,000 tons per month, so that the total imports barely exceeded 300,000 tons. Considering that the iron works of the Alpine Montangesellschaft one of the largest Austrian concerns require 600,000 tons of coke annually, it will be obvious that if the coal supply is bad, the coke famine is even worse.

GERMAN INDUSTRIALS plan to purchase American coal to partly replace the supply which up to now has been obtained from Great Britain. Hugo Stinnes, German industrial and financial leader, has sent his representative H. Holleson, to New York City, where offices have been opened at 44 Beaver St. The coal shipments will largely be financed by letters of exchange. German importations are now somewhat restricted by edicts providing that foreign coal may only be used by plants which devote at least 50 per cent of their product to export. Poor railroad conditions also forbid the transportation of foreign coal for more than a short distance.

ITALIAN COAL IMPORTS have shown an increase of late. During the second half of February, about 326,000 tons were imported of which 170,000 tons were for private account and the rest for State account. England heads the list of suppliers with about 161,000 tons while 80,000 tons were shipped by the United States, 85,000 tons by Germany and an insignificant tonnage by Belgium.

FRENCH COAL STOCKS are so heavy that in view of the present reduced industrial consumption the British coal strike will not have any marked influence on American exports of fuel. French output and deliveries of German coal are almost sufficient to cover current requirements, and it is unlikely that any demand for outside coal will develop for the next six months at least.

GERMAN INDUSTRIAL CONDITIONS continue to be seriously affected by coal shortage. According to the *Bergwerks-Zeitung*, of Essen, the glass branch is getting 800,000 tons, as against 2,500,000 before the war, the porcelain branch 300,000 tons, against 720,000 tons, the lime branch 850,000 tons, against 3,000,000 tons, and the cement branch 780,000 tons, against 3,600,000 tons. These figures refer only to bituminous; most works are, in addition, getting large quantities of lignite, which has low heating power, and requires reconstruction of furnaces.

AMERICAN COAL OWNERS are offering terms to Italian and French buyers which enable them to purchase American coal at less that half the price of Welsh coal, it was declared by a deputation from the Coal Exporters' Association to the Commercial Committee of the South Wales Owners' Association recently.

INCREASED BUNKER COAL ORDERS are resulting in higher cargo rates to Italy and Rotterdam. Contracts for foreign shipments, however, have not been strengthened by the British strike, the only effect being that vessels are ordering coal for round trips.

GERMANY PROTESTS AGAINST the sale by Allied Governments to neutrals of coal delivered by her on the reparations account in a note addressed to the Reparations Commission and the Belgian Cabinet by the German Government. It is asserted that Belgium is disposing of German coal in Holland, aggregating several thousand tons, which has been offered for sale abroad at prices below those Germany is able to quote.

ITALY AND CZECHO-SLOVAKIA have completed a commercial treaty which is advantageous to the former, since it opens the road for the transportation of coal from Upper Silesia through Bohemia, while Czecho-Slovakia is favored by traffic privileges through the port of Trieste to the Levant and Mediterranean districts generally.

Meager Coal Shipments Blamed for Decline in Freight Movement

RAILROADS of the United States, according to the Car Service Division of the American Railway Association, report a further decrease in the number of cars loaded with revenue freight during the week which ended on March 26, due principally to a continued decline in the loading of coal. The total for the week was 687,852 cars, or a reduction of 3,855 compared with the preceding week; 212,534 below the total for the corresponding week in 1920 and 25,423 cars under that for the corresponding week in 1919.

Declines compared with the previous week in the loading of grain and grain products, live stock, coal, coke and forest products were shown, while increases were reported in the loading of ore and merchandise and miscellaneous freight, which included manufactured products. The loading of merchandise and miscellaneous freight alone totaled 447,189 cars, or an increase over the preceding week of 6,259 cars, but a decrease of 89,000 cars compared with the corresponding week in 1920. Decreases in the loading of all other classes of freight compared with the corresponding week in 1920 also were reported.

During the week 122,189 cars were loaded with coal, which was a new low record. This was a decrease of 3,800 from the preceding week's loadings and a decrease of 78,785 compared with the corresponding week in 1920. Compared by districts, the number of cars loaded during the week in each region was less than during the corresponding week last year, but all showed increases over the week of March 19 except the Central Western and Southwestern.

Strikers Shoot Up Mingo County Coal Mines

COMPARATIVE peace prevailed in the Mingo County, West Virginia, field throughout the duration of the Matewan trial. This seems to have come to an end and determined attempts to close down the mines by a manifestation of force appear to have recommenced. On Tuesday night, April 5, a veritable fusillade was poured on the village and plant at Merrimac, where the White Star Mining Co. operates. The attack was more violent than any that preceded it.

As soon as the shooting was reported to the Sheriff's office at Williamson, five miles from Merrimac, Captain Brockus and fifteen members of the state police with Sheriff Lon Pinson and a member of deputies went to the beleaguered town and took charge of the situation, returning the fire, which came not only from the Kentucky hillsides but from those in West Virginita also.

The mode of attack on Merrimac was a little different from that heretofore undertaken. It resembles rather that made on Willis Branch in that the dwellings of the miners, the company office and the store became the target for the attacking party.

According to reports made to Sheriff Pinson an attack was made on the same night on the mining community of Burnwell, and as at Merrimac the dwellings of the miners, the office and store and the home of the superintendent were fired on. As the bush warfare in the Williamson district resembles that employed on Willis Branch, the deduction is made that such attacks have the same originating head.

Washington State Miners Still on Strike

BEN FARRIMOND, president of the state district of the United Mine Workers of America, and Sam Caddy, Washington district member of the national executive board of the big coal-mine workers' union, have returned to district headquarters in Seattle from Indianapolis, where they went to report to the international board on the situation in their state, showing that virtually all the commercial coal mines have been closed down since Feb. 16 as a result of the refusal of the local unions to accept a 23 per cent wage cut. The situation has not changed in any way since the shutdown.

Sufficient men to man the pumps and keep the properties in repair are at work at all the commercial mines. Apparently no bitterness exists between operators and miners; but both sides are standing pat on the position they have taken.

The miners contend that their agreement does not expire until April 1, 1922, and that if the mines work at all they must do so at the wage scale provided in that agreement. The operators contend that unless the miners agree to a wage reduction of approximately 23 per cent the mines will remain closed, as they cannot meet the outside competition of the Vancouver Island coal and of that mined in Utah by non-union miners, especially in view of the fact that fuel oil from California is at all times a strong competitor.

The ranks of the miners are solid, and no attempt has been made by the operators to import any non-union men. The national union of mine workers, speaking through its executive council, has indorsed the position taken by the miners of Washington.

Operators and Miners Protest Against Mattes Mine-Cave Bill

REPRESENTATIVES of the leading anthracite coal companies testified before the members of the joint Mines and Mining Committee of the Pennsylvania Senate and House against the Mattes mine-cave bill, which would tax all anthracite companies for the damage done by mine caves. The testimony pointed out that only in Scranton was such damage being done and that it would be unfair to make other companies pay for the damage which certain coal companies in Scranton and the vicinity alone were causing.

Judge F. W. Wheaton, representing the Lehigh Coal Co., said that his company would support a bill similar to the Workmen's Compensation Act which would require each company to make reparation for the damage it causes by surface subsidence. Senator Albert Davis has prepared a bill along these lines, which would overrule the waiver clause which leaves the owner of a property undermined no recourse at law for such damage. The Delaware, Lackawanna & Western R.R. Co., Coal Department, and the Pennsylvania Coal Co., which already pay such compensation where the property is valued at less than $5,000, were not represented by counsel.

Mark Edgar, for the General Citizens' Mine Cave Committee, said that it was only a question of time when the whole anthracite region would be thus affected. The coal could not be removed, he contended, without destroying the surface.

Howat Fined $200 for Ordering Strike

JUDGE ANDREW J. CURRAN of the Crawford Country District Court, Kansas, sentenced Alexander Howat, district president of the United Mine Workers of America in Kansas, on April 8, to pay a fine of $200 for having ordered a strike of coal miners two weeks ago. Howat also was required by the judge to give a bond for $5,000 that he would not again violate the anti-strike injunction that was issued last autumn. This order of the court he has violated twice in the course of the present year.

In February last he, with other defendants, was found guilty of causing a strike and was sentenced to serve a year in jail. Thomas Harvey, secretary-treasurer of the Kansas mine workers, broke with Howat in February and refused to call a strike. For this the friends of Howat are seeking to have him ousted. August Dorchy, district vice president, on the other hand, backs Howat in the ordering of strikes despite the requirements of the state law in Kansas.

Columbus Rejects Bid of $1.85 for Coal

H. CLAYTON CAIN, secretary of the Columbus City Board of Purchase, has rejected all bids for coal for various city departments opened April 4. The reason for the rejection as given by the board is the belief that with the opening of the Lake trade and the mining of lump, screenings will be much cheaper than at present. The low bid received was $1.85 per ton, Hocking nut, pea and slack, f.o.b. mines.

New York City Awards Contracts for 293,941 Tons of Coal; Tenders To Be Asked on 109,554 Tons More

CONTRACTS for 293,941 tons of coal and coke have been awarded by the Board of Purchase of the City of New York as the result of bids opened on March 16. The total tonnage called for in the proposal was 403,495 tons, consisting of 317,681 tons of anthracite and 85,814 tons of bituminous. As it is necessary that provision be made for obtaining the entire tonnage required by the various departments, the Board of Purchase will soon ask for bids for the balance of 109,554 tons required.

It will be noted that these prices include delivery and are therefore to be considered as on an approximate parity with retail prices on Manhattan Island. The attempt of the city to obtain a bid on the entire requirements of both anthracite and bituminous coal, as reported in *Coal Age* of March 10, page 464, met the fate that was predicted by the trade at the time, and as a result the city is awarding a contract for each small parcel of its requirement.

The successful bidders and the tonnages awarded them follow:

Bellevue and Allied Hospitals.—Inter City Fuel Co., Bellevue Hospital: 27,040 tons buckwheat No. 2, barge deliveries, $6; 112 tons stove coal, $13.65; 23 tons semi-bituminous, $8.85. Gouverneur Hospital: 33 tons stove, $13.85; 73 tons chestnut, $13.85; 3,248 tons buckwheat No. 2, $7.90.

Whitney & Kemmerer—Harlem Hospital: 5,600 tons buckwheat No. 2, $7.65.

William Farrell & Sons—Fordham Hospital: 3,472 tons buckwheat No. 2, $7.95; 33 tons chestnut, $13.65; 55 tons semi-bituminous, $8.99.

Fire Department.—Francis M. A. Leach: 7,839 tons (3,079, 2,352, 840, 952 and 616 tons) semi-bituminous, $8.12; 100 tons cannel coal, $17.90.

W. J. Howe & Co.: 526 tons egg coal, $12.74; 109 tons chestnut, $12.74.

Police Department.—Francis M. A. Leach: 1,344 tons semi-bituminous for steamer John F. Hylan, $8.12.

Department of Plants and Structures.—Commonwealth Fuel Co., Brooklyn delivery: 1,008 tons buckwheat No. 1, $8.99; 336 tons semi-bituminous, $9.24; 6,048 tons semi-bituminous, Municipal ferry terminal, Astoria, $8.42.

Penn Fuel Co.: Municipal Ferry, 39th St., Brooklyn, 26,880 tons buckwheat No. 1, $7.45.

William Farrell & Son—St. George Ferry Coal Pockets: 80,640 tons buckwheat No. 1, $7.98.

Department of Water Supply, Gas and Electricity.—George D. Harris & Co., Ridgewood (Brooklyn) Pumping Station: 10,304 tons semi-bituminous, $7.27.

Department of Parks, Manhattan.—William Farrell & Son, truck deliveries: 1,400 tons broken, $13.63; 587 tons egg, $13.63; 272 tons, stove, $13.63; 10 tons chestnut, $13.63; 24 tons, George's Creek, $9.99.

Department of Parks, Bronx.—Richard Morrison, truck deliveries: 280 tons egg, $12.74; 359 tons stove, $12.74.

Department of Parks, Brooklyn.—Commonwealth Fuel Co., truck deliveries: 556 tons egg, $13.83; 693 tons stove, $14.18; 336 tons buckwheat No. 1, $8.99.

Department of Public Welfare, Manhattan Deliveries.—Inter City Fuel Co.: 67 tons stove, $13.85; 1,568 tons semi-bituminous, $9.05.

Department of Public Welfare, Brooklyn Deliveries.—V. H. Youngman & Co.: 15,792 tons mixed (75 per cent No. 3 and 25 per cent slack), Kings County Hospital, $7.42; Greenpoint Hospital, 2,800 tons buckwheat No. 2, $7.49.

Commonwealth Fuel Co.—Kings County Hospital, 504 tons stove, $14.10; Greenpoint Hospital, 101 tons stove, $14.10; Coney Island Hospital, 78 tons stove, $14.60; Cumberland Street Hospital, 1,008 tons semi-bituminous, $8.98 and 33 tons stove, $14.10; 106 tons stove to two points of delivery, $14.10.

Coney Island Coal Co.—Coney Island Hospital, 1,680 tons mixed (75 per cent No. 3 and 25 per cent slack), $9.23.

William Farrell & Son—Seaview Hospital, Richmond, barge delivery: 17,808 tons mixed, $8.94; 638 tons, stove, $12.99.

New Dorp Coal Corporation—Seaview Hospital, barge delivery: 560 tons buckwheat No. 1, $8.90.

Inter City Fuel Co.—City Hospital, 8,818 tons buckwheat No. 1, barge delivery, $7.00.

B. Nicoll & Co.—City Hospital, 2,942 tons semi-bituminous, run-of-mine, barge delivery, $7.14; Metropolitan Hospital, 10,640 tons semi-bituminous barge delivery, $714; City Home, Blackwell's Island, 7,280 tons semi-bituminous, barge delivery, $7.14.

William Farrell & Son—Randall's Island, 14,291 tons mixed, barge delivery, $7.99; 672 tons stove, barge delivery, $12.99; City Home, Blackwell's Island, 728 tons coke, barge delivery, $12.99.

Department of Health, Manhattan.—Inter City Fuel Co.: 600 tons buckwheat No. 1, $8.75.

William Farrell & Son: 50 tons pea, $10.95; 1,140 tons pea for steamboats, $11.49.

Inter City Fuel Co.—Willard Parker Hospital, 6,000 tons buckwheat No. 2, $6.45.

Department of Health, Brooklyn.—Commonwealth Fuel Co.: Flatbush Avenue and Willoughby St., 196 tons buckwheat No. 1, $8.98.

V. H. Youngman & Co.—Kingston Avenue Hospital, 7,200 tons buckwheat No. 2, $7.94.

Whitney & Kemmerer.—Riverside Hospital, North Brother Island, 5,600 tons buckwheat No. 2, $7.47.

L. R. Wallace—Otisville (N. Y.) Institutions, 3,100 tons stove coal, f.o.b. siding, $11.90.

Department of Correction.—Inter City Fuel Co.: City Prison, 224 tons buckwheat No. 3, $6.50; 50 tons semi-bituminous, $8.55. Penitentiary, Blackwell's Island, 373 tons buckwheat No. 3, $4.50; 298 tons semi-bituminous, $7.55. Workhouse, Blackwell's Island, 560 tons buckwheat No. 3, $4.50. Riker's Island, 149 tons semi-bituminous, $6.75. Hart's Island, 381 tons buckwheat No. 3, $4.65, and 560 tons semi-bituminous, $6.70.

Coal Output of Principal Countries of the World, Calendar Years 1919 and 1920

OTAL production of coal by the principal countries of the world during the calendar years 1919 and 1920, according to information received by the U. S. Geological Survey up to April 9, 1921, is shown in the following table. The data are subject to revision as final official figures are received. Lignite and brown coal are included; they are given separately where possible.

PRODUCTION OF COAL IN PRINCIPAL COUNTRIES OF THE WORLD, CALENDAR YEARS 1919 AND 1920

(In metric tons of 2,204.622 lbs.)

Countries		1919	1920
NORTH AMERICA			
Canada	Coal	9,756,019	15,080,597
	Lignite	2,655,309	
Greenland		2,160	*a*
Mexico		693,866	*a*
United States		495,460,893	585,732,560
SOUTH AMERICA			
Argentina		*b* 4,784	*a*
Brazil		*a*	*a*
Chile		*b* 1,539,314	*a*
Colombia		*a*	*a*
Peru		339,560	*a*
Venezuela		*b* 25,177	*a*
EUROPE			
Italy	Coal	*c* 1,158,541	149,315
	Lignite		1,662,430
Austria	Coal	89,794	133,173
	Lignite	1,986,964	2,387,996
Belgium		18,342,950	22,413,535
Bulgaria		577,000	*d* 744,000
Czechoslovak Republic	Coal	10,384,800	11,130,800
	Lignite	17,110,500	19,695,500
France	Coal	21,546,000	24,300,000
	Lignite	895,000	1,000,000
Germany	Coal	*e* 116,500,000	*e* 140,757,433
	Lignite	93,800,000	111,634,000
Greece		*f* 157,956	*a*
Hungary		*a*	*a*
Jugo Slavia		2,497,394	*a*
Netherlands	Coal	*g* 3,540,064	*g* 4,115,638
	Lignite	1,881,962	1,395,851
Poland		6,083,700	*a*
Portugal		*a*	*a*
Rumania		*d* 3,000,000	*d* 3,000,000
Russia		*a*	*a*
Spain	Coal	3,901,637	5,367,625
	Lignite	539,872	552,866
Spitzbergen		*h* 88,776	*h d* 170,000
Sweden		429,267	*a*
Switzerland		*a*	*a*
United Kingdom		233,467,478	232,975,000
ASIA			
British India		22,991,217	*d* 18,000,000
China		23,000,000	*a*
Chosen		*b* 187,623	*a*
Federated Malay States		194,363	*a*
Indo-China		*b* 636,000	*a*
Japan		*i* 30,236,000	*d* 31,000,000
Russia		*a*	*a*
Turkey		481,331	*d* 700,000
AFRICA			
Algeria		7,419	*a*
Rhodesia (Southern)		462,698	524,796
Tunis		*b* 46,305	*a*
Union of South Africa		9,313,232	11,181,846
OCEANICA			
Australia		10,736,321	9,100,000
British Borneo		*a*	*a*
Dutch East Indies		841,705	*a*
New Zealand		1,847,848	*a*
Philippine Islands		*b* 15,663	*a*
Totals		1,157,535,000	1,300,000,000

(*a*) Estimate included in total. (*b*) 1918 figures. (*c*) Includes bituminous shale. (*d*) Based on incomplete data. (*e*) Includes Saar basin 1919, 8,990,000; 1920, 9,410,433 tons. (*f*) 1917 figure. (*g*) Includes slack. (*h*) Shipments to Norway and Sweden. (*i*) Figures represent output from coal mines, producing not less than 10,000 tons and from lignite mines producing not less than 3000 tons.

News from the Capital

By Paul Wooton

THE SECRETARY OF THE TREASURY recently asked the opinion of the Comptroller of the Treasury as to whether the department had authority to contract and pay for coal for the fiscal year beginning July 1 next, in advance of the availability of the appropriation therefor on that date, for coal for Federal buildings under its control. The supervising architect in charge of public buildings is prepared to invite bids from mine operators for this coal. The Treasury had in mind saving money on coal by purchases in April, May and June, taking advantage of reduced anthracite prices. The Comptroller rules that the Sundry Civil Act of March 4, 1921, authorizing the Treasury Department to contract for the purchase of fuel for public buildings in advance of availability of appropriations, also sanctions advance contracts for fuel for the next succeeding fiscal year not to exceed the needs of that year. He holds, however, that authority to make contracts does not imply authority to pay for deliveries made in advance of July 1, the purpose of Congress being to enable the government to obtain and benefit by lower prices for early contracts and early deliveries.

CONGRESS HAS RECEIVED a petition from the Delaware Legislature urging legislation to regulate coal prices in the interest of the consumer. The petition favors "some strong and effective government action in the interest of the public for control of industries that produce prime necessities of civilization, such as coal." It declares that during the past year all commodity prices except coal have declined steadily, while the price of coal to the consumer has mounted higher and higher. The petition also declares that there is a widespread belief among the people that the mine owners have deliberately retarded production with a view to creating a scarcity and boosting the price of coal.

THE COLOMBIAN TREATY, now before the Senate for ratification, provides that coal which is the product of Colombia, for Colombian consumption, passing from the Atlantic coast of Colombia to any Colombian port on the Pacific coast, and vice versa, shall, whenever traffic by the canal is interrupted, be transported over the Panama Railway free of any charge, except the actual cost of handling and transportation, which shall not in any case exceed one-half of the ordinary freight charges levied upon similar products of the United States passing over the railway and in transit from one port to another of the United States:

THE REASSEMBLING OF CONGRESS on April 11 marked the introduction in the House by Representative Newton, of Minnesota, of the Calder coal regulation bill. Senator Calder did not reintroduce the hill in the Senate, although he is expected to do so later.

REPRESENTATIVE LAMPERT, OF WISCONSIN, introduced his bill, which failed in the last Congress, providing for investigation of coal mines and coal lands looking to government ownership of coal mines.

EDITORS OF NEW YORK BUSINESS PAPERS spent Tuesday, April 12, in Washington, where, at the invitation of Secretary Hoover, they familiarized themselves with the personnel and work of the Department of Commerce as the work of the bureaus of that department touched each of the fifty-six industries represented by the editors of these papers. In the evening Secretary Hoover was the guest of the editors at an informal dinner at which there was general discussion of the problems of industry and relation of the Department of Commerce to American business. In the afternoon the editors visited the Bureau of Efficiency where Herbert D. Brown, the director of the bureau, explained in an interesting manner the work of his organization.

EFFECTIVE MIDNIGHT APRIL 12 the Interstate Commerce Commission vacated and set aside Service Order No. 5 providing for preference and priority for pooled over non-pooled lake cargo coal and movement of non-pooled lake cargo coal; Service Order No. 10 providing for preference and priority in the supply of cars assigned to the Ore and Coal Exchange at any Lake Erie port for transshipment by water to Northwestern States and Service Order No. 11 providing for preference and priority for coal consigned to the Tidewater Coal Exchange for transshipment by water to New England.

THE MONTANA LEGISLATURE has asked Congress for authority to lease state lands for coal and other minerals on terms and conditions to be prescribed by the Legislature. It declares the present 5-year lease is too short and has resulted in failure to develop the lands.

SENATOR POINDEXTER, OF WASHINGTON, has introduced a bill for 20-year leases of coal and other minerals on school lands in Washington State.

THE WISCONSIN LEGISLATURE also has petitioned Congress to control profiteering in necessities of life, saying the states cannot control the price of coal. It is requested that Congress determine the possibilities of state action, in addition to prescribing federal legislation.

CHAIRMAN BUTLER OF THE House Naval committee has introduced a bill authorizing the President to requisition fuel necessary to maintain the navy.

CONSTRUCTION BY THE shipping board of a fuel station at Hazzell Island, Virgin Islands, is provided in a bill introduced by Representative Greene, of Massachusetts.

SENATOR SMOOT HAS INTRODUCED a bill for agricultural entries on coal lands in Alaska.

IRA JEWELL WILLIAMS, of the firm of Brown & Williams, Philadelphia, attorneys for the New River Collieries Co., Inc., in its suit against the United States Government (*Coal Age*, April 7, 1921, page 639), called our attention to the fact that it is hardly fair to say that the trial judge "set a new and startling precedent for the coal trade," as Judge Peck of Ohio and Judge Meyer of New York had made exactly the same ruling, following decisions of the U. S. Supreme Court and of courts of the various states in eminent domain cases. "Indeed," stated Mr. Williams, "no case to the contrary was or could be cited as to the measure of damages of just compensation where a market exists for the property of a citizen."

British Coal Strike, After Causing Split in Triple Alliance, Seems Doomed to Early Failure

SELDOM have negotiations between the government, capital and labor been subject to more sudden and dramatic changes than those of the present British coal strike. Lloyd George's contention that the union should withdraw its order compelling the "safety men" to abstain from pumping out the mines and working the hoisting engines being withdrawn, negotiations between the mine workers' representatives and the operators opened on Monday, April 11, as already stated. April 12 still found the mine workers obdurate, only one of the eight proposals of the government being looked upon with favor. This was that after wages had been adjusted the government would give temporary financial aid to offset too sudden reduction in wage in some of the mining areas.

The railroad men and transport workers, who were to have struck on midnight of April 12, had delayed their strike, but as soon as the disagreement took place the date was set for Friday, April 15. The feeling in favor of the sympathy strike, apathetic at first, was getting stronger, a manifesto of the Triple Alliance dated April 11 having given it life. This statement declared that while prices are 141 per cent above the pre-war standard, the wages which it was proposed to be fixed would be 50 per cent below the cost of living. It emphasized the fact that control of the railroad by the government would end, according to present schedule, on Aug. 31, and that when they fell back into private control a similar attempt would be made to reduce wage schedules. Where then would be the dockers' minimum of 16 s. ($3.88) per day, and where the seaman's rate of pay?

At the same time it began to be realized that the declaration of the Lime St. Railroad station men at Liverpool that their leaders were steering them to Bolshevism, and that they would not strike, was merely a hoax or an attempt to start a movement in opposition to the action of the alliance.

Wholesale Sympathetic Walkout Threatened

To add further to the desperateness of the situation the Amalgamated Society of Locomotive Enginemen and Firemen, comprising 75,000 men who are not in the Triple Alliance, announced that they also would strike on Friday. The executive board of the Railway Clerks' Association recommended that the membership of that union join in the strike, and the Electrical Workers of London, also threatened to quit their jobs. The next day, April 14, the Federation of General Workers, of which J. R. Clynes, Member of Parliament, is head, and which controls a million and a half persons in more than one hundred industries, decided to join the general strike called for 10 p.m. of the following day.

On the day preceding the evening set for this stupendous event the Triple Alliance broke up, declaring that the miners were wrong in refusing to reopen negotiations with the colliery owners. There also was what amounted almost to a split in the mine workers' ranks, Frank Hodges, the secretary of the Miners' Federation, having informed Members of Parliament on the night before that the miners were ready to discuss wages first and make the matter of distribution of profits something for later consideration. Lloyd George consequently invited the colliery owners to be present, but after waiting for more than an hour for the arrival of the mine workers the Premier had to report to Parliament that the promise had been repudiated.

The mine workers clearly overreached themselves in their anxiety to satisfy their political aims. They bitterly realized the rebuff they had received and severely reproached the Alliance officials and Frank Hodges. As a result that official resigned, but his resignation was not accepted. A meeting was held on April 15 at the Russell St. headquarters in London, at which the mine workers' representatives decided to return to their several districts and consult the rank and file, following this with a meeting on April 22.

Reports as to the flooding of the mines vary. In South Wales twenty-three pits, mostly small ones, are said to be flooded. Other reports say that eighteen mines are ruined. On April 11 pumping had been resumed in Monmouthshire at all collieries but two. The Scotch miners received with bad grace the order to permit pumping to be resumed and at Cowdenbeath they attempted to bomb the police station. The Fifeshire pits are all flooded. Several Staffordshire pits are irretrievably ruined. W. E. Bridgeman, Under Secretary of the Board of Trade, asserted that throughout the length and breadth of Great Britain forty mines had been flooded, affecting the employment of 16,000 men out of more than 1,000,000 engaged in the British mines.

It seems certain that when an agreement is made the wages of the mine workers will be substantially reduced. The mine workers' latest position is that they would be willing to accept a 2s. reduction (49c.) in the daily wage. The mine owners proposed twice as large a cut. The wages, even if reduced to suit the operators, will still be much larger than in pre-war days. Even in South Staffordshire they will be 55 per cent higher and in Durham they will be 141 per cent.

Business is being severely curtailed by the strike. The Federation of Iron and Steel Manufacturers announced that on April 12 only thirty furnaces out of 109 operating April 1 were in blast and that before the end of the week all would be damped down. Since April 14 a signed order has been necessary to obtain coal for domestic use. Appeal has been made for economies by the cutting down of lights in homes, the curtailing of the use of gas and the minimizing of illumination in public halls.

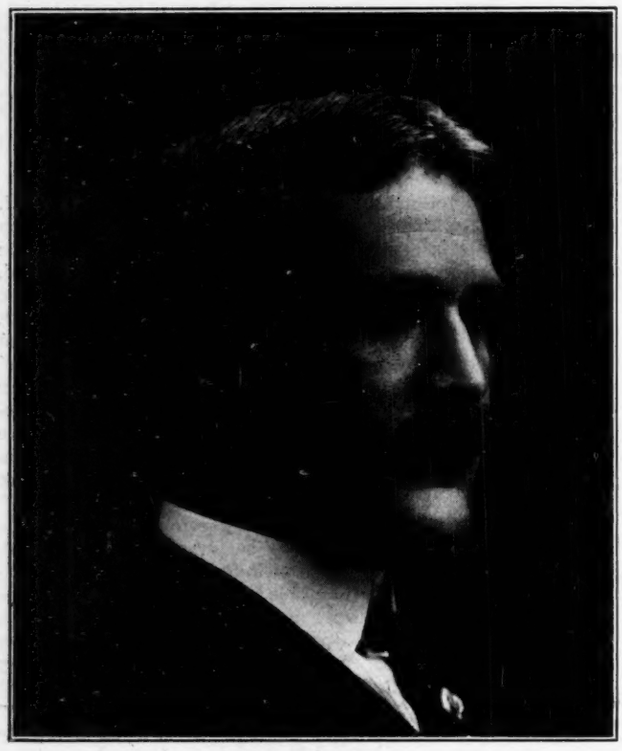
Recruiting of the defense organizations has gone along most satisfactorily but has been ultimately stopped by the filling of quotas. Every preparation had been made for the transport strike and it was fully expected that the people would have been supplied with food without serious trouble by the motor-transport service provided.

F. M. Chase, Lehigh President, Dies

FRED. M. CHASE, president and general manager of the Lehigh Valley Coal Co., died at 2:15 a.m. Friday, April 8, at his home, 184 South River St., Wilkes-Barre, Pa. His death was caused by a blood clot on the brain that formed following a stroke of paralysis. Dr. S. P. Mengel, chief surgeon of the Lehigh Valley Coal Co., who with Mr. Chase has labored for years in the improvement of the towns of the Lehigh Valley and in the care of the health of the employees, attended Mr. Chase in his last hours.

Mr. Chase was born Jan. 24, 1865, at Broad Top, Huntington County, Pennsylvania. At the age of fourteen he migrated to Wilkes-Barre and took a position as office boy with the Lehigh Valley Coal Co., Israel Morris, then one of the company officials, finding him the humble post. In turn he became clerk, chief clerk, assistant to the general manager, general superintendent, and assistant general manager. When in 1912 Samuel D. Warriner left the Lehigh Valley Coal Co. to become president of the Lehigh Coal & Navigation Co., Mr. Chase became vice-president and general manager under E. E. Loomis, who headed both the coal company and the Lehigh Valley Railroad Co. On Jan. 10 of this year Mr. Chase was made president and general manager.

The work of Mr. Chase in the Lehigh Valley Coal Co. has from a technical point of view always been progressive, but the outstanding feature in his administration has been the unfailing interest he has had in the welfare of the men who worked for the company. Mr. Chase was a vice president of Coxe Bros. & Co., Inc. One of his brothers



F. M. CHASE

is Edward B. Chase, general sales manager of the Berwind-White Coal Co.

J. M. Humphrey, of Dorrancetown, Pa., has been elected president in place of Mr. Chase. He has been chief engineer of the company for the past six years. Thomas P. Thomas, also of Dorrancetown, has been elected general manager. Judge Frank W. Wheaton, recently appointed vice president and general counsel, becomes chairman of Board of Directors, a newly-created position. L. A. Tompkins, of New York City, is elected vice president. These appointments were made on April 13.

Government to ask Dismissal of National Coal Action

Ohio Companies Obtain Temporary Injunctions—Contend that Hearing of 224 Cases at Once Would Prevent Fair Trial

AT THE request of the government, the date on which it is to present its case in the action brought in the Supreme Court of the District of Columbia by the National Coal Association has been extended. A temporary restraining order was granted, which was answerable on April 12. The government was not prepared to make its case at that time and the order was extended in the form of a temporary injunction to remain in force until a further order of the court. A hearing was set for April 25.

Another order in the same category was that granted by the court at Toledo, Ohio, in the case of the Ohio Collieries Co., the Cambria Collieries Co., the Tropical Mining Co., the George M. Jones Co. and George M. Jones versus various prosecuting officers of the government. The hearing in that case has been set for April 29.

According to L. Ert Slack, special Assistant Attorney General in the prosecution of the coal cases, on his return to Indianapolis last week from Washington, where he has been in conference with Guy D. Goff, the government intends to make a motion to dismiss the suit filed by the National Coal Association against various Federal officials in the Supreme Court of the District of Columbia.

The Pittsburgh Coal Co. and the Great Lake Coal Mining Co., the former of which has a branch office in Columbus and the latter its main office, have obtained a temporary restraining order from Judge Sater of the U. S. Court at Columbus, Ohio, to restrain federal officers in the Southern Ohio court district from serving summons on them to appear for trial in the Indiana courts. The defendants with G. C. Weitzell, vice president of both corporations, contend that it is unconstitutional to bring them to trial in the Indiana courts when they are residents of the Southern Ohio district. It also is alleged that the trial of 224 cases at once would prevent a fair trial. The two companies are indicted on five counts, including conspiracy in restraint of trade, illegal combination and monopoly. Violations of both the Clayton law and the Lever Act are alleged. The temporary restraining order is effective until April 19, from which date the corporations ask a permanent injunction.

Indiana coal operators, miners, union officials and companies indicted for alleged violation of the Sherman Anti-Trust law by the Federal Grand Jury will not have to face Judge Albert B. Anderson on arraignment day, May 3. Instead they will be arraigned before Judge Ferdinand A. Geiger, of Milwaukee, who comes to Indianapolis April 25 to sit for Judge Anderson for about two weeks. The matter of arraignment is wholly a formal proceeding and it is believed that if and when the cases finally come to trial Judge Anderson will be on the bench.

Ohio, Kentucky and West Virginia Coal Men Obtain Return of Pre-War Differential

MANY interested shippers and coal operators from the various points in Ohio, Kentucky and West Virginia concerned in the proposed increase in rates on coal over the Louisville & Nashville R.R., attended the joint hearing of the Coal, Coke and Iron Ore Committee of the Central Freight Association and the Southern Freight Traffic Committee for the railroads, held at the Hotel Sinton, Cincinnati, last week. Coal rates from eastern Kentucky and West Virginia to Cincinnati, Louisville and intermediate points were among the chief topics discussed at the meeting.

Present rates on bituminous and cannel coal from the McRoberts district on the L. & N. are $1.75 a ton, while those from the Kanawha district are $2.10 a ton. The difference was created when increased rates went into effect last August. Prior to last August the rates were practically the same, but when an increase of 40 per cent was made on coal from the Kanawha district and of 25 per cent on coal from the McRoberts district, the relation of the tariffs from the two sections was thrown out of alignment.

An agreement was reached which eliminates a large part of the 35c. and 45c. differential on coal from the Kanawha and New River fields. The rate recently in effect on coal from points on the L. & N. has been increased to $2 a ton. It will thus be observed that the differential has been reduced to 10c., the pre-war basis.

H. L. Ogden Advises Placing Coal Contract Now to Avoid Being Caught Short Later

H. L. OGDEN, purchasing agent for the Gas & Electric Improvement Co. of Boston, told the members of the New England Association of Purchasing Agents, at a meeting held in the Westminster Hotel at Boston on April 11, that they had better contract for future coal needs. Mr. Ogden quoted statistics showing the production and consumption of coal and recommended that all purchasing agents place contracts now, so as to avoid being caught short later in the year. About 250 purchasing agents were present.

The officers of the National Association of Purchasing Agents will urge all purchasing agents to contract at once for their coal supply.

The coal contract recently adopted by the Fuel Committee of the National Association of Purchasing Agents has been adopted and put into use by the United Collieries Co. of Chicago. L. F. Boffey, secretary of the association, states that other companies are contemplating similar action.

Frelinghuysen Bill Would Vest Coal Commissioner's Powers in Director of Geological Survey

WASHINGTON CORRESPONDENCE

SENATOR FRELINGHUYSEN'S revised federal coal commissioner bill vests the powers therein granted in the Director of the U. S. Geological Survey. The director of that bureau, which is in the Department of the Interior, is to bear in addition the title of Federal Coal Commissioner. "The commissioner," reads the bill, "for the performance of his duties as such, and without prejudice to his right to receive compensation as director of the U. S. Geological Survey, shall receive an annual salary of $5,000."

With the foregoing exception, the bill stands practically as it was introduced originally by Senator Frelinghuysen. The bill provides that the commissioner shall investigate the "organization, management, and practices of dealers and operators; costs and profits in connection with the mining, sale and distribution of coal; the terms contained in leases of coal mines, the prices demanded or received for coal, the distribution, storage and sale of coal and the methods and processes employed therein; the consumption of coal, and the transportation of coal in commerce, including the distribution of coal cars."

In addition, the commission is to investigate "wages, working conditions, terms of employment and the living expenses of miners and other workmen employed in mines from which coal is transported in commerce," as well as "methods and processes for the storage of coal."

SCOPE OF PROPOSED COMMISSIONER'S POWERS

The commissioner is charged with specific instructions to co-operate with the Interstate Commerce Commission in promoting the proper distribution and most efficient use of coal cars. He is instructed to investigate the desirability and practicability of prescribing statutory standards for various kinds and grades of coal and is to make recommendations on such subjects to Congress. In another section of the bill the commissioner is instructed to investigate the desirability of a statutory zoning system defining the distance from the mines within which coal therefrom may be transported in commerce.

Full powers are granted to insure the appearance of any persons engaged in the coal trade and to require from them reports dealing with any phase of their business in coal. Penalties are provided to cover disobedience to the subpoena of the commissioner and to cover any wilfully false report. The bill goes into a great deal of detail as to the type of assistants who may be employed and as to general procedures. An appropriation of $50,000 is provided for the annual expenses of the work.

It is known that Dr. George Otis Smith, director of the U. S. Geological Survey, has expressed the opinion that the bill should head up in the Secretary of the Interior. Dr. Smith also has gone on record as being thoroughly opposed to the placing of fact finding and of regulatory functions in the same bureau.

Senator Frelinghuysen states that he expects to discuss the bill with the Committee on Interstate Commerce at an early date. In view of the extensive hearings which have been held on the bill, he is not certain that further hearings will be necessary.

NO INFORMATION IS FORTHCOMING from the Interstate Commerce Commission as to the probable date for the hearing on the assigned-car matter. As the commission makes a practice of giving three weeks' notice in important cases of this kind, and from the fact that such hearings usually are set for the latter part of the month, when they will not interfere with the regular conferences held during the first three weeks of the month, it is regarded as practically certain that the matter will not come up before the last week of May. Probabilities favor the last week in June as the more likely time for the investigation.

IN ORDER THAT more subjects may be covered, the National Coal Association has decided to continue its annual meeting for a day longer than was originally planned. The meeting will be held in New York May 19, 20 and 21. The original plan was for a two-days' session only. No announcement has been made as to any feature of the program, but it is expected that five topics covering matters of greatest current interest will be assigned to men particularly qualified to handle them. Ample opportunity is to be given for discussion of these topics, as well as other phases of the coal industry.

Central Pennsylvania Operators Want Mine Workers to Agree to Reduced Wage Scale

A MEETING of union and non-union coal operators was held at Altoona, Pa., April 13, for the purpose of a general discussion of the serious problems now confronting the public, operators and miners of the central Pennsylvania field. None of the operators' associations which deal directly with the United Workers of America was officially represented, the purpose of the meeting being an exchange of individual views and information. There were 115 coal-producing companies represented at the meeting.

Production in the district has fallen from a maximum during the week of Dec. 12, 1920, of 2,515,000 tons to 1,051,000 tons during the week of April 3, 1921, or a decrease of 58 per cent. Part of this decrease is due to lack of demand and part of it is due to the inroads made by other districts employing non-union labor on the markets formerly supplied from this region.

It also was brought out that many consumers who usually contract for their yearly supply have refused to renew their contracts, being firmly of the conviction that the cost of coal must come down even lower before American business can hope to resume a normal stride. Operators who employ union labor stated that it was impossible to make any further price concessions at the present wage scale.

They also said that the consuming public could not expect that the present wage agreement fixed by the award of the U. S. Bituminous Coal Commission appointed by the President of the United States would be broken unless the union would consent to a modification of its terms.

At the conclusion of the meeting the following resolution was unanimously passed. "Resolved, that the executive committees of the operators' associations authorized to negotiate wage agreements with the United Mine Workers of district No. 2 be urged to promptly tender an offer to the officers of the United Mine Workers of America to meet in joint conference at an early date to discuss the grave problems confronting the central Pennsylvania field."

Anthracite Mine Workers Accept Wage Cut

MINE workers at the Chauncey colliery of the George F. Lee Coal Co., at Avondale, Pa., in the northern anthracite region, Luzerne County, on March 27 accepted a wage reduction of 10 per cent, following the closing of the colliery on March 24. The men of the Jermyn Coal Co.'s mine continue to refuse to accept any reduction and at a meeting of the tri-district board of the United Mine Workers of America, April 6, the members of that board went on record as being opposed to the acceptance of any such reduction. The board proposes to use its good offices to find work for the men at other collieries. The Red Ash colliery in Laurel Run has closed down because of the depression.

Coal Output of 1920 Near Pre-War Level; Effect of War Offset by Heavier Production in Neutral Lands

THE year 1920 will be a memorable one in the history of the world's coal supply. The prices reached were the highest of modern times and, as usually happens at such a time, the quality of the output deteriorated. In the last two years of the war the world's output had risen close to the pre-war level. After the armistice, however, the cessation of munitions manufacture and the delay in resumption of normal business curtailed the demand for coal. Industrial disputes both in Europe and America closed many mines late in 1919 and further reduced the supply. Thus when in 1920 the world set its face to work again and industrial activity was resumed, where resumption was possible, consumers' reserves of fuel proved insufficient, according to F. G. Tryon, of the Geological Survey, and an almost universal feeling of apprehension over the coal supply swept around the world. The reasons for this alarm —lately a thing of the past—become clear when the world's production in 1920 is cast up.

Reports received by the U. S. Geological Survey indicate that the total output in 1920 was about 1,300,000,000 metric tons. This, although a great increase over 1919, was still 42,000,000 tons short of the output in 1913, the last year before the Great War. The course of production during the last decade is shown in the following table. The unit of measurement, it will be noted, is the metric ton, which will be most easily remembered by American readers as roughly equivalent to the gross ton of 2,240 pounds.

THE WORLD'S PRODUCTION OF COAL, 1910-1920
(In metric tons)

Year	Production (In Part Estimated)	Per Cent Produced by United States	Year	Production (In Part Estimated)	Per Cent Produced by United States
1910	1,160,000,000	39.2	1916	1,296,000,000	41.4
1911	1,189,000,000	37.9	1917	1,345,000,000	44.0
1912	1,249,000,000	38.8	1918	1,331,000,000	46.2
1913	1,342,000,000	38.5	1919	1,158,000,000	42.9
1914	1,205,000,000	38.6	1920	1,300,000,000	45.1
1915	1,196,000,000	40.4			

The fluctuations in world coal supply become somewhat clearer if expressed as index numbers, taking the output in the year 1913 as equal to 100. The production in the other years then becomes as follows:

1910	86	1916	97
1911	89	1917	100
1912	93	1918	99
1913	100	1919	86
1914	90	1920	97
1915	89		

The present rate of production in the world is the resultant of conflicting forces; the decline in the war-torn countries is being offset in part by an increase in regions remote from the battlefields. In the belligerent countries of Europe the war cut heavily into production. Sometimes the cause of the decline was physical destruction of the mines, as in France; sometimes it was the drain upon the manpower of the nation; sometimes it was merely the economic disorganization and disruption of normal trade which attended the war. In France the 1920 output (excluding the Saar and Alsace-Lorraine) was 46 per cent less than that of 1913; in Great Britain the decline was 20 per cent; in Germany (also excluding the Saar and Alsace-Larraine) the output of bituminous coal decreased 24 per cent, a decrease which was in part, however, offset by the increased production of lignite. In Eastern Europe—the old Austro-Hungarian Empire, Russia, and the Balkans—the breakdown caused by the war was even greater than in Western Europe, and the decline in output was proportionately large. Of all the major European belligerents only Belgium had in 1920 practically re-attained its pre-war rate of production.

The decrease in output centering in Europe may be likened to a condition of vacuum. To fill the void on the Continent and in the maritime markets formerly supplied by Great Britain and Germany the outlying coal fields of the world increased their production greatly. The stimulus of demand was felt not only in the neutral countries of Europe—Spain, Holland and Scandinavia—all of which developed their scanty resources to the utmost, but extended to the Americas, Africa and Asia. Japanese, Chinese and East Indian mines took over the bunkering business relinquished by the British in the Far East.

In the bitterness of Europe's need coal from the Appalachians was shipped through Trieste and Fiume to Austria, or carried up the Rhine to Switzerland, passing within gunshot of the great Ruhr field of Germany. Considerable tonnages were brought from South Africa, and a stray cargo from China found its way to Europe. Even the East Indies and far-away Spitzbergen felt the stimulus. The manner in which the outlying countries came to the assistance of Europe is shown in the following table, which gives production, by continents, before and after the war. Only Oceanica, of the distant lands, produced less in 1920 than in 1913, and there, as in Europe, the cause was the disorganization caused by the war, for Australia and New Zealand both sent a large proportion of their able-bodied men to Europe and have not yet regained their pre-war productivity.

Thus, while in 1913 Europe led all the continents as a producer of coal, contributing 54 per cent of the world's output, in 1920 she had yielded first place to North America and her share of the world't total had shrunk to 46 per cent.

The largest factor in filling the void caused by the war in Europe was, of course, the United States. Our production increased from 38.5 per cent of the total for the world in 1913, to 45.1 per cent in 1920. In that year our sea-borne exports of coal were 22,500,000 net tons, five times what they were in 1913.

PRODUCTION OF COAL BY CONTINENTS, 1913 AND 1920
(In Metric Tons)

Continent	1913	1920	Increase or Decrease *	Per Cent of Change*
North America...	531,600,000	601,300,000	+ 69,700,000	+13.1
South America...	1,600,000	1,700,000	+ 100,000	+ 6.2
Europe.....	730,000,000	597,500,000	— 132,500,000	—18.1
Asia.....	55,800,000	75,800,000	+ 20,000,000	+35.9
Africa.....	8,300,000	11,800,000	+ 3,500,000	+42.2
Oceanica.....	15,000,000	11,900,000	— 3,100,000	—20.7
World.....	1,342,300,000	1,300,000,000	— 42,300,000	— 3.2

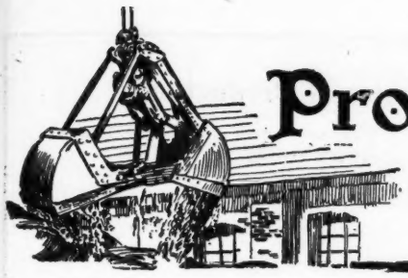
* A plus sign denotes an increase; a minus sign, a decrease.

Supreme Court Upholds Rent Laws, Citing Coal Decisions as Precedents

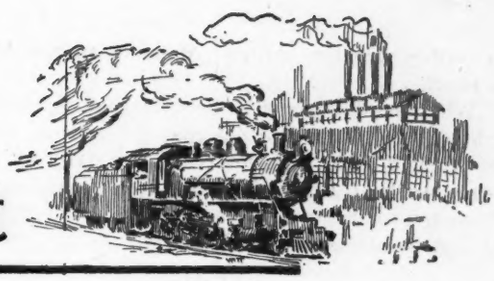
IN AN important decision the U. S. Supreme Court on Monday April 18, upheld the right of Congress to control necessities of life in the public welfare. The decision sustained the Ball rent law of Congress, in which the court made some general conclusions of interest in view of the difference of opinion which has existed as to the right of Congress to control the coal and other basic industries. Five justices of the court joined in a majority report read by Justice Holmes, to which the Chief Justice, Mr. White, was one of four who dissented, holding that the Constitution guaranteed the right of property and contract and could not be superseded by legislation in the interest of the public welfare. Justice McKenna delivered the dissenting opinion, which was a dramatic declaration against government control.

The majority opinion cited previous mining and coal decisions in support of its view that a matter of private concern could be clothed with public interest. Justice Holmes said that circumstances may so change in time or so differ in space as to clothe with public interest what at other times or in other places would be a matter of purely private concern.

Justice McKenna said the law impaired obligations of contract and was contrary to the law of lessor and lessee. He insisted that the security of property against the exertions of government was the "essence of liberty."



Production and the Market



Weekly Review

PRICES and production of bituminous coal continued to bump along on the bottom during the first half of April. It is confidently expected, however, that from now forward production will gradually gain until a real demand is felt that will push it upward more nearly to normal. Prices will follow the same uninteresting course so long as consumers are quiet.

The British strike, which has been in effect nearly three weeks, has produced an abundance of inquiries for coal from abroad but no orders and no shipments that can be traced directly as a result of English conditions. American exporters have suffered no disappointment on that account, for it was known that markets in continental Europe were overstocked and present conditions were forecast. Until stocks become very much depleted, as for instance, in France, Italy and Switzerland or in Scandinavia, these countries are not going to buy coal here at present rates of exchange and with present difficulties in obtaining credits.

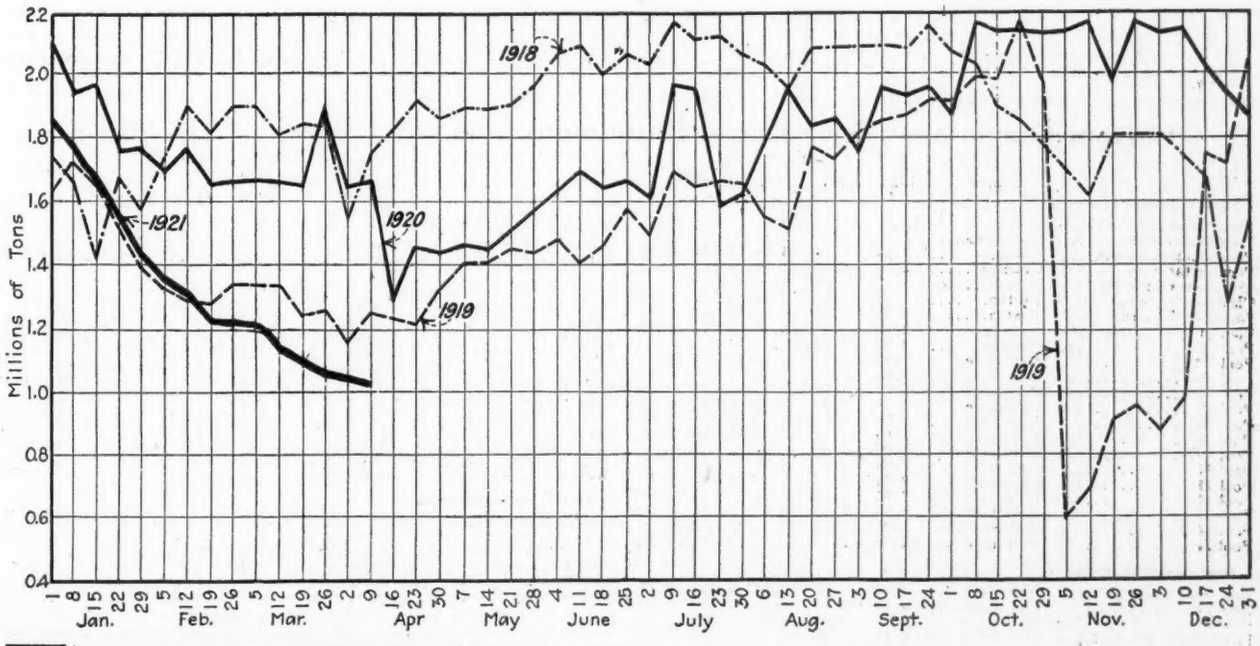
Home markets for coal are dead because industry is marking time. Of nineteen coals quoted by *Coal Age* the spot prices of eight gained, five dropped and six were unchanged from a week ago. The gains were mainly in high-grade low-volatiles on the Atlantic seaboard, though some of the better Western coals developed a little strength. The net result, considering the market as a whole, was a gain of one point in *Coal Age* index of spot prices, from 102 to 103.

Anthracite, after one slump, during the week ended April 2, climbed to 1,865,000 net tons, which is above the weekly average so far this year and well above that of the same period of 1920. Anthracite operators have not felt as yet a slack domestic market and they are hopeful of rousing sufficient interest in summer storage by consumers to tide them over the early summer months. Not until real hot weather hits the East will it be known whether the scant price reductions of this month will tempt domestic purchasing. The opinion is more or less commonly held that 50c. or even a dollar is too little reduction to stimulate buying.

Consumers Hope Freights Will Fall With Wages

Anticipated reductions in freight rates are holding up summer purchasing of coal, both hard and soft. The decision of the Railway Labor Board last week set July 1 as the latest date at which wage adjustments are to be consummated. By inference it is anticipated that freights will go down when wages do and no one wants to invest in high freight cost now. Westbound coal, as anthracite and high-grade fuel from eastern Kentucky,

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

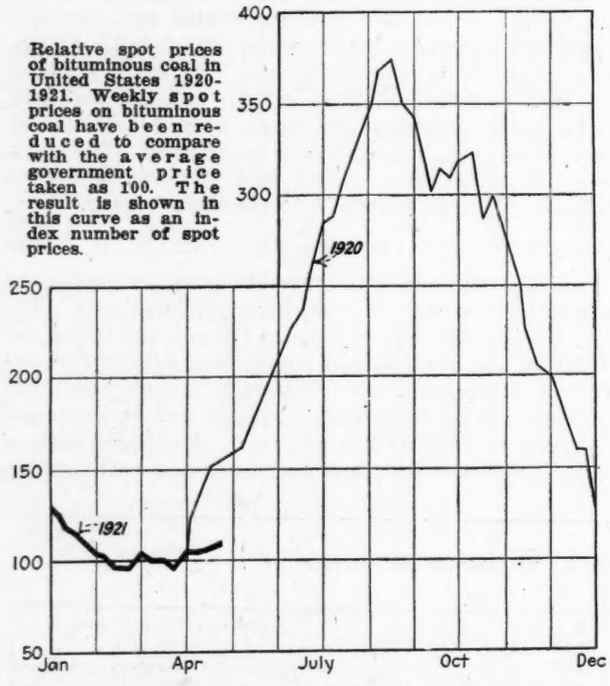
is suffering from sluggish demand in the Midwest as a result.

What has happened to beehive coke is readily appreciated when it is realized that the output in the week of April 9, 1921, was less than the daily output in the same week of 1920. Coke for iron furnaces is coming from byproduct ovens—the beehive ovens, in fact, have at last become standby plants.

BITUMINOUS

Production during the week ended April 9 was 6,089,000 net tons, according to the Geological Survey. The rate per working day continued to decline, although the output exceeded that of the holiday week preceding. Loadings improved slightly on Monday and Tuesday, April 11-12.

Steam coals are in slightly increased call in the Central and Southwest States, as reserves appear to be getting lower. The upturn is scarcely perceptible, but coupled with continued low production and fewer forced sales, is giving a better tone to the market. Contract making apparently is being indefinitely postponed.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY (NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
Mar. 26*b*	6,457,000	96,801,000	11,015,000	126,585,000
Daily average	1,076,000	1,339,000	1,836,000	1,751,000
April 2*b*	5,823,000	102,624,000	9,715,000	136,300,000
Daily average	1,059,000	1,311,000	1,619,000	1,741,000
April 9*c*	6,089,000	108,713,000	9,690,000	145,990,000
Daily average	1,015,000	1,290,000	1,615,000	1,732,000

(*a*) Less two day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date *b*	1920 Week	1920 Calendar Year to Date *a*
Mar. 26	1,564,000	21,183,000	1,921,000	20,609,000
April 2	1,157,000	22,747,000	1,314,000	21,923,000
April 9	1,865,000	24,612,000	1,538,000	23,461,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

BEEHIVE COKE

Week Ended April 9*a* 1921	Week Ended April 2*b* 1921	Week Ended April 10 1920	1921 to Date	1920*c* to Date
79,000	87,000	477,000	2,633,000	6,428,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Union miners are adamant in their refusal to consider any reduction in their wage scales. However, slack operating time has brought out an interesting labor condition—union miners are migrating to non-union fields, seeking work where wages have been lowered. During the past week more than five hundred union miners sought employment in the Connellsville region, where a cut in wages has been in effect since April 1.

Lakes demand is dragging. There are some 8,000 cars at the lower ports, awaiting bottoms and an extremely sluggish start of the season is indicated. Freight rates inland from the upper docks have been revised, generally downward, effective July 6, to afford dock fuel more even competition with Illinois and Indiana all-rail. This is the occasion of an active drive for business by the mine operators, who are seeking to establish their customers before the new rates

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar. 1920	Mar.22 1921	Apr.12 1921	Apr. 19 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.25	$3.35	*$3.25*
Pocahontas lump	Columbus	2.60	5.50	5.50	5.50
Pocahontas mine run	Chicago	2.35	4.15	3.85	**3.50@ 4.50**
Pocahontas lump	Chicago	2.60	5.00	5.00	4.50@ 5.50
*Smokeless mine run	Boston	....	5.85	6.00	*5.85*
Clearfield mine run	Boston	2.95	2.50	2.35	2.00@ 2.75
Somerset mine run	Boston	2.95	3.00	3.05	2.35@ 3.75
Pool 1	New York	2.95	3.30	3.40	**3.25@ 3.75**
Pool 1	Philadelphia	2.95	3.50	....	3.50
Pool 1	Baltimore	2.95	3.05	3.15	**3.25**
Pool 9	New York	2.95	2.75	2.80	2.60@ 2.95
Pool 9	Philadelphia	2.95	3.05	3.25	*3.00*
Pool 9	Baltimore	2.95	2.90	3.00	**3.00@ 3.15**
Pool 10	New York	2.95	2.65	2.35	**2.35@ 2.75**
Pool 10	Philadelphia	2.95	2.50	2.75	**2.75@ 3.00**
Pool 10	Baltimore	2.95	2.35	2.50	2.50
Pool 11	New York	2.95	2.20	2.15	2.00@ 2.25
Pool 11	Philadelphia	2.95	2.30	2.15	**2.25@ 2.35**
Pool 11	Baltimore	2.95	2.30	2.25	2.25
Pool 71	New York	2.95	2.75	3.15	*2.70@ 3.25*
Pool 71	Philadelphia	2.95	2.75	3.15	**3.25**
Pool 71	Baltimore	2.95	2.95	3.00	**3.00@ 3.15**
High-Volatile, Eastern					
Pool 34	New York	2.50	2.00	1.85	**1.75@ 2.20**
Pool 34	Philadelphia	2.50	2.15	1.85	**1.85@ 2.00**
Pool 34	Baltimore	2.50	2.00	2.10	*2.00@ 2.15*
Pittsburgh mine run	Pittsburgh	2.35	2.25	2.25	2.00@ 2.50
Pittsburgh sc'd gas	Pittsburgh	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run	Columbus	2.70	2.25	2.25	*2.00*
Kanawha lump	Columbus	$2.95	$3.25	$3.50	*$3.25*
Hocking mine run	Columbus	2.50	2.15	2.25	*2.15*
Hocking lump	Columbus	2.75	3.25	3.25	3.25
Pitts. No. 8 mine run	Cleveland	2.35	2.15	2.25	2.20@ 2.35
Pitts. No. 8 lump	Cleveland	2.60	3.50	3.50	**3.50@ 3.75**
Midwest					
Frankl n, Ill., mine run	Chicago	2.35	3.35	3.40	3.25@ 3.50
Franklin, Ill., lump	Chicago	2.55	3.55	3.55	3.45@ 3.65
Central Ill., mine run	Chicago	2.35	2.00	2.25	**2.25@ 2.75**
Central Ill., lump	Chicago	2.55	2.50	3.00	2.75@ 3.25
Ind. 4th Vein mine run	Chicago	2.35	2.65	2.65	**2.50@ 3.00**
Ind. 4th Vein lump	Chicago	2.55	3.15	3.15	**3.00@ 3.50**
Ind. 5th Vein mine run	Chicago	2.35	2.50	2.65	**2.50@ 3.00**
Ind. 5th Vein lump	Chicago	2.55	2.75	3.00	2.75@ 3.25
Standard mine run	St. Louis	2.35	1.85	1.90	**1.90@ 2.00**
Standard lump	St. Louis	2.55	2.60	2.25	2.25
West Ky. mine run	Louisville	2.35	2.50	2.40	*2.00@ 2.50*
West Ky. lump	Louisville	2.60	3.15	2.90	**3.00**
South and Southwest					
Big Seam mine run	Birmingham	2.45	2.95	3.05	2.90@ 3.25
Big Seam lump	Birmingham	2.75	3.75	3.60	3.25@ 4.00
S.E. Ky. mine run	Louisville	3.00	2.75	2.65	**2.75**
S.E. Ky. lump	Louisville	3.25	3.60	3.60	**3.75**
Kansas mine run	Kansas City	3.50	4.50	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.50	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in heavy type, declines in *italics*.

take effect. Agitation for lower rates from the mines to the lower ports continues.

All-rail shipments to New England fell off during the week ended April 9. Reports show that 2,274 cars were forwarded through the five rail gateways.

Now that the danger of a general British strike seems to have been averted for the moment, there is little prospect of any greatly increased export demand. Heavier bunkering business and an increasing line of inquiries have raised Tidewater quotations. During the week ended April 14 the Hampton Roads piers dumped 360,000 tons.

BITUMINOUS COAL DUMPED AT ATLANTIC PORTS IN FEBRUARY AND MARCH, 1921, IN THOUSANDS OF NET TONS

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Mar. Total	Feb. Total
Coastwise to New England	114	20	86	364	..	584	518
Exports	.....	73	95	421	43	632	712
Bunker	350	47	41	228	2	668	626
Inside capes	.....	158	91	27	1	277	235
Other tonnage	601	...	3	59	4	667	611
March total	1,065	298	316	1,099	50	2,828	....
Feb. total	1,009	254	252	1,146	41	.....	2,702

ANTHRACITE

Prompt recovery followed the depression attending the Easter holidays. During the week ended April 9, 1,865,000 net tons were mined, an increase of 708,000 tons. Production for the coal year 1920-1921 is estimated by the Geological Survey at 89,700,000 net tons and is compared with preceding years in the following table:

PRODUCTION OF ANTHRACITE, COAL YEARS, IN NET TONS

1913-14	88,323,000	1917-18	100,372,000
1914-15	90,298,000	1918-19	92,791,000
1915-16	93,318,000	1919-20	91,900,000*
1916-17	87,947,000	1920-21	89,700,000*

Loading for Lakes continues active and bottoms are still available. New England reports a better domestic demand, as the public seems to have awakened to the fact that further price reductions are out of the question. The New York market also is active, but Baltimore trading is sluggish. Rumors of an advance of 20c. on domestic sizes on May 1 are heard in Philadelphia, where a cold snap has furnished a temporary spurt.

COKE

Beehive coke production continued to decline and another low record was set—79,000 net tons for the week ended April 9. The Connellsville market is very stagnant but prices are well established at $3.50 for spot furnace, $3.75 for contract; foundry, $5@$5.50, spot or contract. At two or three works there have been some slight interruptions due to labor trouble, where the wage reductions of April 1 were not willingly accepted.

Reports From the Market Centers

New England

BOSTON

Only Occasional Inquiry — Operators Follow the Spot Market Closely — Hampton Roads Situation Unchanged —Anthracite Shows Signs of Better Demand.

Bituminous—Disquieting news from England caused a slight renewal of interest in the current market, but this quickly subsided when the threatened strike was postponed. There is occasional small inquiry from those able to find room for spot coal, but no pronounced buying sentiment has yet developed in any quarter. Many consumers find themselves with such large reserves that for the next twelve months they will be obliged to buy only 40 or 50 per cent of their normal requirements. So general is this that buyers feel no apprehension over continued light output at the mines.

Operators are continuing meanwhile to keep closely in touch with the spot market. In general the range of price remains with little modification, but now and then inducements are made to provide a week's operation for this or that mine. Sales agents are laying siege to buyers and every rumor of possible purchase is run to earth.

Receipts are on the same light basis characteristic since April came in, and neither by water nor by rail has there been noted any sign of increase. At the New York and Philadelphia piers very few cargoes have been cleared coastwise, even though there is a great surplus of bottoms, and rates, under the conditions, are on a moderate basis. On bituminous in P. & R. Ry. barges the rate to Boston is now $1.60 and to Bangor but 30c. more.

There is now the closest competition for retail bituminous business. The low bid for 14,000 tons to be supplied to City of Boston buildings for the twelve months to end April 1, 1922 was $9.43 per net ton delivered.

Pocahontas and New River are still suffering from a stagnant market. At all three terminals the volume of coal standing is far in excess of boats either waiting or engaged, and now that British colliery trouble seems to have been composed for the moment there is little prospect for any real demand overseas. The close basis is still $3 per net ton at the mines for contract.

Current mine quotations on bituminous are shown in the Weekly Review. On cars for inland delivery Pocahontas and New River remain on the basis of $8.25@$8.50 per gross ton, Boston and Providence.

Anthracite—While there is as yet no decided impetus to the domestic demand there are beginning to be signs of better retail trade. There is more apparent confidence in the current price basis as the lowest of the season, and active sales efforts on the part of dealers are beginning to show results. The pressure in the cities is for egg and stove, and elsewhere for stove alone. The lack of demand for broken and chestnut will soon halt shipments of stove in excess of the actual proportion mined. It is likely, therefore, that movement to this territory will be somewhat accelerated the next few weeks.

Tidewater—East

NEW YORK

Independents Advance Schedule Prices — Demand Is Stronger — Bituminous Shows Improvement — Less Coal Moving—Prices Up.

Anthracite — Buying is brisk and while company coals have always found a ready market, independent product is becoming scarcer and hard to pick up. Most of the independents who continued to mine coal during the recent depression in the market report heavy bookings. Quotations for independent domestic sizes range 10c. to 30c. above the new company prices, depending upon grade.

Efforts to induce early buying is bearing fruit, the only fear of the retailers being that so much coal might be put away during the next couple of months that it might result in a comparatively dull summer.

Current quotations for company coals, per gross ton, at mine and f.o.b. Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.10@$7.75	$ 9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.00	8.12@ 8.47
Buckwheat No. 1	3.50	5.97
Rice	2.50	4.97
Barley	1.50	3.97
Birdseye	2.50	5.02

Bituminous—A stronger market exists. Demand is slowly picking up and prices are a trifle steadier, although the general average shows little difference from last week.

Locally the situation shows little change, but a betterment is noticeable inland. Not much benefit has resulted here from the British strike. There has been a marked increase in the number of inquiries but actual sales are comparatively few. Liners continue to

take on a double quantity of coal to avoid any possible trouble in making the return trip. There are between 200 and 300 vessels at anchor in this harbor awaiting cargoes, which, if they could obtain them, would mean a rush for bunker coals.

The renewal of contracts is slow work. Consumers are not entering into new deals at a price around $4 when good grades can be bought in the open market at approximately $1 lower.

Some of the good grades are said to be well sold ahead. This is particularly true of coals included in Pools 9 and 71. It was also said that one operator entered orders for a considerable tonnage of Pool 9 at $3.

Quotations for the various pools, f.o.b. local docks show a wide range. The trend, however, seemed to be about as follows: Pool 1, $6.25@$6.50; Pool 9, $6.20@$6.30; Pool 10, $6@$6.25; Pool 71, $6.25@$6.50; Pool 11, $5.25@$5.50. Mine quotations are reported in the Weekly Review.

HAMPTON ROADS

Business Picks Up — Prices a Trifle Stronger—Better Pier Conditions.

Business at the piers has been a little more brisk than at any time during the previous four weeks, the British coal strike apparently having the effect of stimulating both price and demand. Pools 1 and 2 are now $6@$6.75; other pools range $5.50@$5.75.

The situation at the three piers for the week ended April 14, was as follows:

N. & W. piers, Lamberts Point—	
Cars on hand	1,998
Tons on hand	91,862
Cars dumped	2,511
Tons dumped	137,116
Tonnage waiting	18,945
C. & O. piers, Newport News—	
Cars on hand	2,589
Tons on hand	128,950
Cars dumped	2,345
Tons dumped	121,987
Tonnage waiting	5,000
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,338
Tons on hand	66,900
Cars dumped	2,060
Tons dumped	103,041
Tonnage waiting	11,400
Cars on hand outside pool	118

The Lamberts Point piers Friday morning were filled with ships awaiting cargo, every berth being taken for the first time in several weeks. Many of these are going to England.

Contracts continue to be held in abeyance here, only a few local dealers having renewed contracts for the new year.

BALTIMORE

Slump Continues Acute Despite Anticipated Strike Stimulus—Much Coal Uncontracted—Hard Coal Trade Inactive.

Bituminous—While a good line of export inquiry continues, actual closings remain few and the slump in movement from this port has become more pronounced, only two ships having cleared with export coal for the first half of April. The anticipation of the British strike caused a tightening of quotations on future delivery by holders of better coals and a better tone in local trading.

There is much good coal on the market uncontracted. Holders of best coals are figuring that there will be ample demand a little later, but nevertheless the temptation to sell is causing coals to be let go at figures in many cases entirely too close to the margin of production. Prices are shown in the Weekly Review.

It is an odd coincidence that the new coal pier of the Western Maryland has been completed and put into commission at the time of lowest handling in a long period. The pier was tested out the past week by loading the collier Melrose for New England.

Anthracite—Hard coal men are bewailing the public attitude of not ordering. Personal urging, newspaper advertising and other measures have failed to change this situation. A serious time is ahead for both dealers and consumers if the great majority let the summer pass well along before making any effort to get coal. With soft coal consumers taking the same stand one of the worst freight congestions in years is forecast. Meanwhile, dealers are interested to see what action producers will take on the public complaint, made through the retail association by letter, concerning the class of preparation that has been the vogue since mid-war days. During the war poor preparation and over-standard amount of slate and rock was admitted, as was the mixing of sizes. The claim is that this continues.

PHILADELPHIA

Anthracite Stimulated by Cool Spell—Mines Working Full Time — Price Increase Likely May 1 — Bituminous Unchanged — Tide Trade Mostly for Bunkers.

Anthracite—With another unseasonable drop in the temperature recently the consumer was stirred to some activity and the retail trade experienced a little boost. However, the dealers are a unit in stating that the outlook is not particularly promising, as they have very few orders ahead, cleaning up the business as fast as it offers.

There has been a plentiful supply of coal of all sizes coming in, the only sign of scarcity being at times on stove.

All the companies are holding firm to their prices and it seems to be taken now without question that there will be an increase on May 1. In some quarters it is reported that the advance will not be more than 10c., while there is a persistent story out that one of the companies intends to put on 20c., if not 25c.

The trade has been much interested in the proposed 2 per cent tax on anthracite and for a time it looked as though it would go through. The opinion is general now that it will not be enacted into a law.

The small sizes are giving all operators much cause for anxiety. Pea is particularly weak and the companies have now begun to drop a surplus of this size in the storage yards. Independents are moving some around $5.25@$5.50. Steam coals are also in heavy over-supply and all companies are storing heavily. Individual buckwheat can be had around $2.75@$3.25.

The company prices per gross ton for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide
Broken	$7.25	$ 9.95
Egg	7.25	9.95
Stove	7.55	10.20
Nut	7.55	10.20
Pea	5.90	8.30
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—If anything, less coal has been coming in lately. The consumer is just as cautious as ever in buying anything but the most meager tonnage. The big users still have very large stocks on hand and are doing little work. The iron industry locally does not improve and until it does there will be very light coal buying. The manufacture of cotton goods has improved considerably of late, and this trade, together with the utilities, has served to make what little business there is offering.

Recent prices have shown a tendency to remain firm, with occasional stiffening. Quotations are shown in the Weekly Review. Some shippers continue to try for contracts, but very little business is being concluded. There is an occasional report of some shading of contract prices, but most interests are still holding to their former figures.

The export trade remains quiet, with business mostly confined to bunkering. Effects of the British strike have now been well discounted and have not changed the local market, outside of the slight tendency to induce a little more buying by some domestic consumers.

BUFFALO

Dull Bituminous Market Continues—Business Is Waiting for Industrial Adjustments—Anthracite Lakes Loading Active.

Bituminous—Some active shippers, who have made friends with the consumers, are able to sell a fair amount of coal, but the office that is not making running expenses is common. The worst of it is that there is not the slightest sign of improvement. Shippers are given to saying that conditions are actually growing worse, or that if they are not it is because everything is at a standstill.

It is common, though, for people who find business dull to say that it is the worst they ever knew it to be, so that some allowance must be made for that sort of pessimism.

There is no improvement in the manufacturing trade. It is the general idea that consumption of most articles is much greater than production and that the consumer has less stock in hand from day to day, so that manufacturing will be obliged to increase considerably before the end of the year. Another

difficulty is that the seller is never satisfied unless he can sell much more than is actually needed, thus making the consumer a speculator and a direct contributor to the fluctuations in trade.

Anthracite—Demand continues light and there is an unusual amount of competition. New and aggressive dealers have come in this season. Never before has any new concern been able to eat into the trade, which has long been mostly in the hands of four or five distributors, who look after the small retailers and at the same time do retailing on their own account.

Canadian demand is better than it is for bituminous, but it cannot be called good. Everywhere the idea prevails that a trade war is going to reduce prices still further. The cut of $1.40 in Toronto no doubt added to the impression. Instead of improving trade it is said to have hurt it, both in and out of that city.

In the Lakes trade the loading is brisk, about 300,000 tons now being afloat. So far only two cargoes have left and one of them tied up in Cleveland.

Coke—The trade is quite as dull as ever. Contracts are run out, but nothing is being done to make more and nothing is expected until iron ore begins to move. Distributors of gas from local ovens are getting so little that they are obliged to buy coal and make their own gas.

Northwest

MINNEAPOLIS

Revision of Rates Has Not Stimulated Demand—Trade Deaf to Shortage Talk.

The triumphant announcement which went forth with the decision of the Interstate Commission revising coal freight rates was by no means backed up by the decision itself. When it comes to the point of establishing a freight saving it is found that a portion of the rates are raised and some are lowered and many are uncertain until all angles are studied.

Regardless of the general effect, the present market demand is almost at a standstill. This announcement alone had the effect of holding back orders—if there were any to hold—until the outcome was noted on freights. But there is also the appeal to the railroad men for lower freights on coal. That, too, would have the effect of delaying orders until it was learned how it came out.

So, in the face of several undeniable signs of spring in the shape of admonitions to buy coal early lest the coal famine catch us, the trade in the Northwest is recklessly proceeding on its undisturbed way.

It seems that the transition from a pronounced sellers' market to an equally decided buyers' market has found original sellers unprepared to meet new conditions. They have been under the tender care of government control, where they had nothing to do but produce as much coal as a short supply of cars could handle, and let nature take its course. Now that they are up against a situation which calls for tact, diplomacy, salesmanship, and pertinacity, they fall back upon resources which would hardly deceive a kindergartner.

Locally there is a wide divergence in the prices available on hard coal. One or two companies are quoting at retail $17.30 for nut, $17.20 for stove, $17 for egg and $15.40 for pea. These prices are within 20 or 30c. of the wholesale price to dealers, named by one dock company. As long as buying is as quiet as it is now, it does not make a great deal of difference what is quoted, but this cannot endure indefinitely.

MILWAUKEE

Market Dull—Anticipation of Price Changes May 1—Coal Cargoes Arrive.

Business is confined strictly to immediate needs, as everybody is looking forward to a price adjustment May 1. Anthracite is expected to drop 50c., which amount will be replaced at the rate of 10c. per month. There is some talk of an additional reduction later on, when the supply increases, but this suggestion is not given much credence.

Soft coal may also be advanced. The situation is briefly explained by the president of the Milwaukee-Western Fuel Co., which handles over 80 per cent of Milwaukee's coal supply: "An over supply of soft coal, coupled with a light demand, has forced dealers to cut prices, in many instances below replacement cost. It is impossible to fix the probable increase, but it is certain to affect nearly all grades handled here." Pocahontas has been shaded 50c. Screened sizes now sell at $13, and mine run at $9.50.

Another cargo of 11,000 tons soft coal reached port April 8. There are other cargoes afloat at Lower Lakes shipping points, but these will not be forwarded until it is certain the vessels can secure return cargoes.

Inland West

MIDWEST REVIEW

Only Future Orders Being Placed—Operators Make Drive on Northwest Trade—Few Contract Renewals.

During the past few days there has been some unseasonably cold weather. It has not, however, been severe enough to stimulate domestic buying to any great extent. The coal market on both steam and domestic sizes is dormant, if not dead, and no improvement is expected until July or later.

The domestic situation is very unusual in that retail dealers especially in the Northwest are placing orders for liberal amounts, but this coal is for later shipments. Practically no business has been booked for prompt shipment. Orders have been pouring in for summer and fall deliveries.

There has been no improvement whatsoever in the steam market and this is just as well, because the mines will not be able to produce steam sizes in the cheaper grades until the domestic market picks up. Purchasing agents of both large and small manufacturing concerns are putting off the matter of contracting until a later date. This is going to lead to serious difficulty late in the fall. The contracting season is far behind normal and from present indications it can be judged that all our larger industries are putting off contracting at least for a month more.

Southern Illinois operators see a very bright future for their coal in this territory usually served by the docks at Ashland, Duluth, and Superior, and it is their aim to displace the less favored coals which are sold from the docks. Their anxiety to get new customers started on their coal is accentuated by the fact that there will be a reduction in freight rates on coal from the docks to various points in Minnesota, North and South Dakota and the Northwest in general, early in July. These operators feel that they have had such great success in competition with Ohio and some Pennsylvania coals that they want to strengthen themselves so that when the public begins to buy, they will have more than their share of the business. In short, it is safe to say that the dock operators are going to have to fight for the business they have enjoyed during the past years. Illinois operators do not believe that they can drive West Virginia and Kentucky coal out of the Northwest market, but they do believe that they can hold their own in competition with Hocking, Pittsburg No. 8, Youghiogheny, etc.

Production during the past week at Illinois and Indiana mines does not show any signs of improvement. Two or three weeks ago, a couple of days a week was the average running time but since a number of railroads have taken in their last shipments on contracts, mines that have been running on railroad fuel have been forced to discontinue operations.

DETROIT

Demand Unimproved—Receipts Are Light—Contract Interest Is Lacking.

Bituminous—While some jobbers say they are getting a few more inquiries for steam coal, sales do not reflect an increase in business. They are apparently becoming reconciled to continuance of a waiting policy. The change in industrial and manufacturing lines seems not sufficiently great to produce anything resembling a normal consumption of coal.

Owing to the curtailment of buying orders, shipments are unusually light and little coal is to be found on track. This is preventing coal being thrown on the market at forced prices.

Smokeless lump and egg are quoted at $5, mine run, $3.50, and slack, $1.25. Ohio large lump is $3.40, 2-in. lump, $3.25, ¾-in. lump, $3.05, mine run, $2.50, and nut, pea and slack about $2. West

Virginia and Kentucky quotations are on about the same level as Ohio. There is little or no interest in contracts. Consumption of domestic sizes has been almost discontinued with the coming of warmer weather and retailers are not buying.

Anthracite—Price reductions by the producers have not so far been reflected in similar reductions in the local retail trade.

CINCINNATI

No Contracting — Better Spot Market Forecast—Retail Prices Drop.

With the approach of the the opening of traffic so few contracts have been signed for Lakes business as to make them almost negligible. In fact, there has been no improvement in any contract market and little possibility of any immediate change. Many are inclined to view the situation as one of the public's own making and declare that when there does come a disposition to assure a coal supply the coal man may find it highly profitable to do nothing but a spot business.

Some of the mines, which had noted the short spurt of strength shown in lump demand for the past couple of weeks, over-produced these sizes. The result was a lowering in price to the extent that some of the offerings were sold as low as $2.60. On the other hand, there was an absence of steam coal in distress and a gradual advance both of slack and mine run. The former advanced from $1.75 to $2.25 for the better grades. Mine run, which had been selling around $2, advanced 25c.@50c. Contract prices, however, were not changed, slack being quoted $2.40@$2.75; mine run $3.25, minimum; and lump $3.75@$4 for May and June delivery.

The smokeless market has not varied much since the beginning of the month, though some mine run has been caught in distress. Circular prices are $5 for prepared, $3.50 for mine run and screenings. Of the latter there are scant spot offerings.

Retail prices took a drop last week. Local deliveries are quoted $10 for smokeless block and $8.50 for mine run; bituminous lump $7@$7.50, mine run $7, and nut and slack $6.50.

CLEVELAND

Demand for Slack Continues—Production Improves — Railroad and Lakes Buying Expands.

Bituminous—A growing demand for slack is due to the trend of wholesale and jobbing interests to buy more of it. The supply has been limited by the smaller demand and production of prepared sizes.

Production has taken a spurt. Increased operations are not due to greater industrial activity, although some lines such as tires, automobiles and parts, are improving. The real stimulus has come from the railroad demand and shipment of fuel to the Lower Lakes docks.

Developments are lacking in the efforts of coal operators to get action on freight rate reductions from mines in the eastern bituminous region to the Lower Lakes ports. Prices have changed little in the last week and are shown in the Weekly Review.

Receipts of bituminous coal at Cleveland for the week ended April 9 amounted to 815 cars; industrial 596 cars, retail 219 cars, as compared with 807 cars the previous week.

Pocahontas and Anthracite—With demand almost at a standstill, Cleveland dealers are starting a publicity campaign to induce users to obtain their requirements now. Prices are pictured as being at rock bottom and consumers are warned not to delay.

Lakes—The railroads have about 8,000 carloads of coal at the docks and because of the scarcity of tonnage, dumping is proceeding rather slowly. Many coal shippers must wait until boats from upper ports arrive. Owing to the late start of the ore season it is not believed that tonnage for coal shippers will be any more liberal than at present for some weeks. The grain movement is light also. Navigation through the "Soo" will soon be regular, it is hoped. Retail prices of coal delivered follow:

Anthracite—Egg and grate, $13.75; chestnut, $13.90 and stove, $13.95.
Pocahontas—Shoveled lump, $11.40; mine run, $9.50.
Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15.
Steam Coal—No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 3-in. lump $6.

CHICAGO

Retail Demand Dead—Industrial Conditions Unchanged—Pocahontas in Good Call for Stocking at Yards.

Usually at this time of the year the retailers in and about Chicago are engaged in filling up some of their regular customers with coal. In fact, in ordinary years, quite a large per cent of householders, flat owners, etc., bought and put in their winter's coal during the month of April. This has not proved to be the case this year, as in common with everybody else, the consumers are putting off purchasing of their coal until the very last minute.

The steam market is no different here in Chicago than any other place and conditions are unsatisfactory and dull in the extreme. One or two small contracts were placed this week, but the tonnage purchased was very far below the amount normally contracted for at this time of the year.

Chicago retailers are beginning to wonder what effect the coal strike in England will have upon the Pocahontas mines in West Virginia. Last year when coal exporting was at its height, Chicago retailers were left high and dry, even if they were fortunate enough to have contracts with Pocahontas operators. This year, however, they have been getting some shipments on their contracts, but there is some very reasonable doubt in their minds as to whether they will continue receiving their usual amount of Pocahontas in proportion to the supply on hand, especially if a big order comes in from England. In one or two instances, requests have been made to operators to send shipments forward a little more rapidly.

ST. LOUIS

Scarcely Any Domestic Moving—Steam Call Barely Takes Available Supply—Immediate Future More Promising.

A quiet, easy market prevails on domestic. There has been a little demand on account of the few cool days, but it had only a temporary effect.

There is no domestic coal moving to country points in this territory. The opinion prevails that there will be a reduction in freight rates within the next 90 to 120 days and the dealers feel it is best to wait and buy on the new rate. Railroad officials discount this and say that even if there were a cut in rates, it would not materially affect conditions.

There is just enough steam call to take what is offered, as a rule. Some mines are still crushing coal to take care of contracts. Railroad tonnage is light, although some are buying on the open market.

Dealers are going slow on Eastern coals. Aside from the anthracite orders placed a few weeks ago for about 300 cars, nothing more has been ordered. No smokeless can compete unless the price gets down to about $4 at the mine for lump and egg.

There seems to be a good future for coke locally to replace hard coal and smokeless. It may also hit the Carterville tonnage. No change in prices since last week.

COLUMBUS

Slightly Increased Demand for Steam—Domestic Trade Still Slow—Production Is at Low Point—No Contracting.

Demand for steam sizes has increased. Reserves are gradually being depleted and purchasing agents are now in the market to a larger extent. Public utilities are still buying rather briskly although there is no disposition to contract for any length of time. But few large railroad contracts have been closed. Prices on steam grades are still rather low, with nut, pea and slack from all Ohio fields selling around $1.85@$2 and mine run $2.20@$2.45.

Domestic trade is quiet in every section. Householders are buying only in small lots. No stocking on the part of users is reported and little is expected for some time. Retail prices have reached the lowest point in months. Pocahontas lump sells $9.50; West Virginia splints $7.50@$8.25 for lump and $6.50 for mine run; Hocking lump $6.50@$7.25 and mine run around $5.

Lakes trade is showing little activity. Some vessels are still being loaded at the lower ports but this is not sufficient to stimulate trade. Only a few isolated contracts have been entered into and prices are still unsettled. The

Lakes trade is not expected to show any considerable activity until after the middle of May.

Production in Ohio fields is at the lowest point in years. During the week ended April 2 the southern Ohio field produced less than 100,000 tons out of a capacity of 517,000 tons.

West

DENVER

Production Gains Slightly—Retail Competition Grows.

Slight production increases for the week ended April 2 could be attributed to the opening of the summer storage season, but more properly can be laid to the fact that cold weather has delayed the spring. The output was 130,380 tons of a possible full time production of 257,748 tons.

The general mine price for bituminous in the southern Colorado field is $5.50, although some operators are maintaining the announced schedule of $5.65. The trade is unsteady for the reason that retailers, having figured on a $5.65 basis at the mine, are confronted with a gross margin reduced by 15c. as the only solution of doing any business and meeting the price of $10.50 of one of the largest operator-retailer companies.

Earlier in the year dealers had hoped for a retail price of $11 or possibly $11.50, based on a low storage figure of $5.50. They got the summer storage price, but find themselves facing a strong competitor in the Colorado Fuel & Iron Co., when the latter announced its price of $10.50 on April 1.

South

LOUISVILLE

Retailers Hustling for Business—Large Consumers Refuse to Contract — Prospects for Higher Prices.

While the movement is improving, it is shown that Lakes buyers, like retailers and large industrial consumers, are planning to put off their orders as long as possible, accordingly, their demands for coal may come at one time.

Operations continue on the basis of about two days a week, but are picking up a little. Industrial buying is also somewhat better. Demand for prepared sizes continue rather dull.

West Virginia and northeastern Kentucky quotations received this week show 4-in. block at $3; 2 x 4 egg, $2.75, 2-in. lump, $2.75; mine run, $2.25; nut and slack, $2. Other prices are shown in the Weekly Review.

It is reported that some operators are not at all anxious to take on contract business, as they would not be able to hold the buyers, in many instances, if the market should drop, whereas with an advance almost certain, the spot market offers the best outlet. Some operators are holding contract screenings for $2.75, mine run, $3.50; egg, $3.75, and accepting no contracts on block or lump.

BIRMINGHAM

Steam Market Dull and Listless — Domestic in Fair Demand for Storage—Quotations Without Change.

There is no sign of improvement in the demand for commercial coal as yet, and business is confined to spot channels and to orders for a few cars at a time. Industrial conditions are still in an unfavorable status and consumption of fuel is comparatively light, as is also the railroad call and the demand for bunkerage coal at Southern ports.

Contracting for domestic coal for stocking is progressing fairly well under existing conditions, sales being practically limited to the output of domestic operations, the tonnage to be obtained through the summer from commercial mines, which supply about 50 per cent of the lump coal, being problematical and dependent entirely on the recovery of the steam trade and resumption of operations at such plants. Prices are substantially without change, quotations being shown in the Weekly Review.

Southwest

KANSAS CITY

Cool Weather Causes Slight Stimulation—Contracts Sluggish—Price Advance Seen.

Some improvement has been noticed during the past few days, no doubt due to recent cool weather which caught many dealers without any coal. There has been some buying of higher grades for storage, such as Arkansas smokeless and Pennsylvania anthracite but high freight rates from anthracite fields make the sale of this coal almost prohibitive.

It is expected that the market for steam grades will improve on account of plants resuming operations, but demand has not yet increased to any extent. Very few contracts of any magnitude have been closed. Large consuming plants may stay on the open market so long that operators will decline to make contracts, if not accepted very soon, as the price will be found inadequate and an advance will have to be made to cover the increased cost due to idle time. Little or no change in prices: Arkansas lump continues for April at $6, mine run $4.50, slack $3.50; Kansas lump and nut $5, mine run $4.25@$4.50, slack $3.75; North Missouri lump $4.50, mine run $4, washed slack $4.05.

Canada

TORONTO

Business Showing Improvement — Consumers Ordering Season's Supplies — Bituminous Quiet.

Business is beginning to show improvement as consumers are placing their orders for the season's supply and dealers are fairly busy. An active demand is anticipated, as householders are warned that unless orders are in early they may have difficulty in obtaining supplies later on.

Quotations are as follows:

	Retail
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.25@11.75
Domestic lump	12.50
Cannel	16.00
	Wholesale, f.o.b. cars at destination
¾-lump	8.00@9.00
Slack	6.50@7.00

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Improvement in Demand—Independents Push Sales.

All of the large companies in the upper fields are operating their mines practically full time, with plenty of orders on hand. Many independents are hard hit, as it is impossible to sell their coal at an advance over the line companies price. It is hardly necessary to say that practically all washeries are shut down and those mines that have been operating culm banks and mixing their coal with fresh-mined fuel have temporarily ceased to do so.

Some stimulation is felt by a better buying of spring coal by consumers. Many independent operations, which are now closed, contemplate reopening early in May if this demand continues.

PITTSBURGH

Market Remains Sluggish — Scarcely Any Lakes Business — Byproduct Unsalable.

The market is drifting along without any material change. Even the expiration of the coal contract year has not made any great difference. There is little additional spot demand from the failure to execute new contracts. Consumption is extremely light and in most cases it appears the buyers do not need to renew, while some shipments are carried along with fixing of prices at intervals, until conditions become clear enough to permit the negotiation of prices for the remainder of the year.

There has been some realignment in prices in the past few weeks as between grades. Gas coal is the only

one that shows any strength, steam being weak. Byproduct is practically unsalable and is said to be offered at $2 without finding any takers.

Scarcely anything has been done in Lakes coal and doubts are entertained whether much will be done this season unless freight rates are revised. The present alignment of rates throws the business easily to more Western fields, except sometimes in gas coal, for which buyers will pay 25c. or 50c. more to get the Pittsburgh district's product.

Production remains at well under 40 per cent. The spot market is quoted in the Weekly Review.

CONNELLSVILLE

Market Price Well Established — Some Wage Difficulties — Sales at Minimum.

More furnaces are out of blast than for many years, with no signs of their coming in again, and the few that are operating are well taken care of by contract shipments, except that one purchase of about 1,000 tons of spot coke has been made, probably because contract shipments were interrupted by labor trouble, there being two or three works at which the reduction of April 1 was not willingly accepted.

Foundries have undoubtedly consumed much of the stock coke they had Jan. 1, but are not buying even as freely as formerly. Evidently their operations have undergone a further decrease, even within the past few weeks.

The prompt sale just mentioned was at $3.50, and it develops that the recent sale to a Portsmouth, Ohio, furnace, of 500 tons a day for five or six weeks was at $3.50 instead of at the originally reported price of $3.75. This is evidently the quotable market for spot or prompt furnace coke, though on a contract to July 1 operators might possibly be able to obtain $3.75. We quote foundry $5@$5.50, spot or contract.

The *Courier* reports production in the week ended April 9 at 23,785 tons by the furnace ovens, and 10,980 tons by the merchant ovens, a total of 34,765 tons, a decrease of 15,310 tons. The decrease in merchant oven production was probably due chiefly to difficulties over the wage reduction of April 1.

UNIONTOWN

Export Inquiries Developing—Volume of Spot Offerings Declines, Forecasting Stronger Market.

Export inquiries last week as yet have produced no sales. A 60,000-ton contract has been placed by the Lehigh Valley R.R. at an unannounced figure and deliveries have already commenced. The order is the first railroad contract to be placed in this region this year.

While there are several instances of renewed activity in various sections, there is no indication of any general improvement.

One jobber is securing bids on an inquiry for 30,000 tons of coal on a year's contract, delivery to be made at the rate of two cars a day. Because of the long period of the contract, considering the tonnage involved, he has been unable to secure a bid approaching the present market, the lowest so far being $3, to which would be added handling charges before the tonnage reached the consumer.

The fact that operators have completed heading driving and are now ready for either normal operations or an indefinite suspension is expected to show a reflection in the spot coal market. Distress tonnage is becoming scarce, and while the demand is very light, jobbers are finding difficulty in rounding up a few cars for spot delivery. The same quotations prevail as heretofore.

CENTRAL PENNSYLVANIA

Improvement in Demand Seen — Many Applicants Take Miner's Examinations.

Material improvement in the coal business, which is looked forward to, is confidently expected about July 1. Work is picking up in some sections and last week, for the first time in three months, the Berwind-White Co. kept the big operations at Windber going six days. Demand for coal is largely decreased by the number of freighters lying idle in the eastern ports and these are expected to be placed in service during mid-summer.

Interest in mining has been shown by the large number of men taking examinations for mine foremen, assistants, and fire bosses. At the examination held at Cresson for the Thirteenth Bituminous District, 82 men presented themselves. This was the first examination held in this district, it having just been created last June.

EASTERN OHIO

Production Slightly Increased—Lakes Movement Slow—Contract Negotiations Lag—Slack in Good Demand.

Production continues at a low ebb, output for the week ended April 9 amounting to 283,000 tons or 44 per cent of rated capacity. Total production since Jan. 1 is 4,037,850 tons or about 46 per cent total rated capacity, which results in a production loss for year to date of 4,000,000 tons, due principally to "no markets." Production for railroad fuel account dropped below 50 per cent for the first time in many weeks. Expiring contracts have also contributed to this.

Figures given out by the Pittsburgh Vein Operators' Association indicate that their mines worked 39 per cent of possible time during the week while production was 45 per cent of rated capacity. This means that eastern Ohio mines are getting out at least 50 per cent of their normal production.

Output is bolstered somewhat by shipments to Lakes and railroad fuel. However, movement to Lakes is diminishing because all the tonnage lined up has been loaded. As sailings are at the option of vessel owners and there continues to be a dearth of down cargoes offering, there is expected to be a considerable slowing of the already light movement of coal to Lower Lakes docks.

Contract negotiations are negligible. The feature of the week has been a further stiffening in the price of slack and considerable quantities are reported sold at $2.25. Range of spot prices are shown in the Weekly Review.

To indicate the extent to which some consumers' stocks are depleted during the cold snap of the past few days it was necessary for several schools in this section to close down for a day because of no fuel.

UPPER POTOMAC

Low Spot Prices Cause Lower Production—Sales Not Being Urged.

Lack of demand precluded mines from working any more fully during the week ended April 9. Only those producers fortunate enough to have contracts renewed were able to keep going, hence most of the plants on the Western Maryland were still out of commission. Few producers cared to resume operations at current prices or to urge new contracts, believing that there would be a strong recurrence of demand in the near future.

FAIRMONT AND PANHANDLE

Mine Idleness More Pronounced — Spot and Contract Markets Inactive—Lakes Inquiries.

FAIRMONT

Idleness was even more pronounced during the week ended April 9, being the inevitable result of contract expirations. Toward the end of the week nearly 300 mines were shut down. Buyers were in no hurry to renew their contract agreements and there was a total lack of spot demand.

Railroad shipments were running light. Some Lakes movement was observed during the week but in very limited volume. There was little or no demand at Tidewater.

NORTHERN PANHANDLE

Complete stagnation prevailed during the week, except for a limited volume of railroad coal. Spot demand was as dead as ever, and although a small amount of coal was being accepted on contracts, the large number expiring were not being renewed. Desultory inquiries for Lakes tonnage were being received but were not resulting in any business closed.

Middle West

WESTERN KENTUCKY

Contract Inquiries Fail to Produce Business—Demand Quiet but Outlook Improves.

Things are promising, but there is not much actual improvement in business. Inquiries are more numerous than they have been for contract prices, but after getting quotations many

operators are finding that the buyers hold back, believing that prices are too high.

However, operators are realizing more and more every day that buying is only being delayed, and that it will come late this year, with the result that mines will be asked to produce as much coal in three or four months as they can handle in five or six. A mid-summer rush is expected, which will result in better prices.

Averages for the field last week show: Prepared, $3.05, range, $2.55@$3.75; mine run, $2.25, range, $2@$2.50; screenings, $1.85, range, $1.50@$2.50.

The labor situation has been adjusted satisfactorily in western Kentucky, and mines are running with no trouble reported. A few mines that have not been unionized have been reducing labor costs, resulting in a few scattered strikes.

SOUTHERN ILLINOIS

Summer Domestic Trade Being Cultivated—Steam Demand Weak—Production at Low Figures.

Carterville mines that are working are getting about two days a week. Right now steam sizes are moving just a trifle better than that and some coal is being crushed. The campaign for the early storage of domestic is about to bring results and if this demand means from three to four days a week throughout the field steam sizes will be overproduced. There is nothing to indicate that business calling for steam coal will resume sufficiently to take anywhere near the available tonnage for at least several months.

If this early storing advertising gets a good start it may get away from the coal trade, because failure to move steam sizes will cause the shipper to accept a limited tonnage. When buyers' orders are whittled down by the seller something is going to happen. There is no real rosy future for the operator as the lines are laid today.

Association mines are getting $3.65 on domestic, $2.85 on screenings, and mine run $3.25@$3.50, with little moving. Independent domestic sizes are $3@$3.50, mine run $2.75@$3, and screenings $2.50@$2.75. Railroad tonnage is light. All mines idle are doing heavy repairs.

The Duquoin district is faring poorly. With a few exceptions the prices are at or below cost and many mines are idle indefinitely. Independent prices are about the same as in the Carterville field and sometimes lower.

Production is at low tide in the Mt. Olive field. Domestic for St. Louis is slow. Early storage will not help this district for some months yet, unless unforeseen things happen. Domestic sizes for St. Louis $2.75, country $3, screenings $2.25@$2.50, and mine run $2.25.

The Standard field is at its worst period. Every week sees an additional mine added to the idle list. One and two days a week is the average. Prices are shown in the Weekly Review.

Middle Appalachian

HIGH-VOLATILE FIELDS

Contract Market Is Sluggish — Prices Weak with No Spot Demand.

KANAWHA

Production was down to 11,000 tons daily during the week ended April 9. New business has not accumulated in sufficient volume to compensate for any losses, either in the spot or contract market. Although buyers were showing more interest but few orders were being placed and spot prices reflected this sluggish condition; slack $1.85; mine run $2 and prepared sizes $3.

LOGAN AND THACKER

Slightly better production in the Logan region could be traced to the storing of coal for the most part, although some additional movement was being made to the Lakes. Demand was at a very low ebb and but few contract renewals have been made.

Serious and renewed outbreaks of lawlessness on the part of miners in the Thacker region were noted during the week. Mines did not work more than two days at a maximum. Negotiations on new contracts were not proceeding at a very rapid gait, only a small portion of the yearly output being under contract.

NORTHEASTERN KENTUCKY

A slightly increased demand enabled production to increase to 26 per cent, the output being 59,485 tons. Domestic business was temporarily strengthened by a sudden cold spell. Although contract negotiations were far below normal, there was a little more activity in that direction than has recently been observed.

VIRGINIA

Production averaged about 45 per cent of potential capacity, the slump being due to failure of old customers to renew expiring contracts. There has been no stimulation in demand as a result of the British strike.

LOW-VOLATILE FIELDS

New River Output Continues to Gain—Tide Market Slightly Stronger — No Contract Activity.

NEW RIVER AND THE GULF

Further gain in New River output during the week ended April 9 reflects a gradual improvement in market conditions. Production averaged 20,000 tons daily and was growing stronger as the week progressed. A growing need of bunker coal and a slight increase in export business, not connected with the British strike, caused a slight strengthening. However, should that strike be of long duration, it is thought that it would very much stimulate the home demand.

Winding Gulf conditions were unimproved and in striking contrast to those prevailing in the New River field. Lack of markets prevented mines from working more than two days and held production down to about 30 per cent. Contract negotiations were conspicuous by their absence.

POCAHONTAS AND TUG RIVER

Pocahontas loadings, although slightly increased, were not much in excess of 150,000 tons with "no-market" losses running around 300,000 tons. There was little opportunity to sell spot coal and but few contracts for the new coal year have been signed. The N. & W. are still refraining from much contract activity.

Tug River mines were not operated more than two days and were engaged almost exclusively in filling such contracts as remained in force. Demand was such that little coal could be moved on a spot basis.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Operating Losses Continue — Contract Offers Rejected—Spot Market Quiet.

The new coal year is anything but pleasing to operators, for while the future may seem rosy yet the cold fact remains that they have not been able to run except at a loss for some time, and the immediate future does not hold anything of an encouraging nature.

Many buyers are inclined to demand still lower prices, and some of them simply scoff at the new contracts offered. Those who do not buy now will in all probability learn through bitter experience, that all coal men are not given to misstatements, and that their advice to buy now is founded upon a very sincere desire to avoid any runaway markets similar to those of last year. About the only coal that is moving, for future use, is a little high-grade block. Quotations for all grades are around $3.75 for block for immediate delivery and $4@$4.25 for May or June; $2.75 for mine run and $2 for slack.

West

UTAH

Temporary Domestic Spurt—Steam Trade Poor as Industrial Situation Lags.

Colder weather the past week has caused some stimulation of retail buying. Operators are urging the sale of the smaller domestic sizes, as large lump coal only is moving readily and a continuation of this will embarrass the producers.

The industrial situation is even worse. Smelters are idle and things are at a standstill. Railroads are the best customers, except for the temporary domestic demand caused by the cold weather.

MINE And COMPANY NEWS

ALASKA

Robertson S. Donaldson, who came to Nenana more than a year ago to take charge of the Nenen store of the Alaskan Engineering Commission, and who left the employ of the govenment on Feb. 1, has become general manager for the **Healy River Coal Corporation.** At the annual election of officers he will be formally installed in his new position. Under the present management the Healy mine has been opened in a thorough manner.

COLORADO

In furtherance of a policy to keep the organization intact during the dull period, the **Colorado Fuel & Iron Co.** has a betterments program calling for expenditure of $400,000, as follows: Forty-five houses for miners at the Morley, Kebler, Emerald and Sunrise (Iron mine, Wyo.); cost, $225,000; installation of five stokers (one new) at the Pueblo steel mill, along with Sterling boilers at a cost of $100,000; installing a boiler plant at the Morley mine, two 500-hp. boilers with Reiley stokers, at a cost of $25,000; repairing miners' houses, sanitary sewage systems for plants, putting down lawns and fencing in the yards of miners' homes and otherwise beautifying camps, $50,000. The 15,000 men employed in the coal and iron mines and at the steel plants of the company are kept on a part-time basis through a distribution of orders. The new miners' cottages, costing $5,000, are of hollow tile and brick construction and have bath rooms and other modern conveniences.

Improvements aggregating $30,000 are in progress at the Monarch and Puritan mines of the **National Fuel Co.,** in northern Colorado, and at the Royal mine in the Aguilar district. New entries are being driven in the Puritan, where a new electric hoist capable of handling 1,500 tons a day, is being installed; also eight overcasts for ventilation at the rate of 150,000 cubic feet a minute with a Jeffrey fan.

ILLINOIS

A company has been organized at Mount Olive to open a mine southeast of the town on the L. & N. The company is composed of business men of Mount Olive. Some of the miners have subscribed for stock. At a public meeting $25,000 was subscribed and subscriptions have been coming in steadily since the company was organized. The capital is $400,000 and the company now owns 1,000 acres of coal rights.

Announcement is made of a deal now under consideration between the **Old Ben Coal Corporation,** now operating seven of the largest collieries in the state, and the **W. P. Rend Coal Co.,** both of Chicago. According to the terms of the deal the Old Ben will become owners of the W. P. Rend mine at Rend and also one at Rendville, both in Williamson County. Both mines are of large capacity and with the large acreage in the consideration a sum of over $1,000,000 will be expended. With the acquisition of these two large mines the Old Ben concern enters the Williamson County field for the first time, all of their other properties being located in Franklin County.

Lewis Steele, sales manager for the Consumers Co., Chicago, has after seventeen years of continuous service with that company, organized a concern known as the **L. B. Steele Coal Co.,** of Chicago.

During the slack working time which is now causing all mines to operate from two to three days per week, the Middlefork mine at Benton is getting a new $25,000 plant for reclaiming and washing the fine coal. The mine is operated by the **United States Fuel Co.,** which is a subsidiary of the U. S. Steel Co., and a large portion of the output is shipped directly to some of the largest steel plants in the country.

A fire which resulted in several thousands of dollars damage and for a time threatened a much greater loss recently destroyed the blacksmith shop of the **Taylor Coal Co.,** No. 1 mine near Herrin. The only men on duty at the time were the engineer, firemen and night watchman.

INDIANA

Directors of the **Indiana Coke & Gas Co.** have declared the usual quarterly dividend of 1¾ per cent on the preferred stock outstanding. The dividend was payable on April 1.

William Moore, administrator of the estate of Jesse Moore, deceased, was awarded damages in the sum of $3,700 aganist the **Lower Vein Coal Co.** at Terre Haute recently, in Superior Court. The deceased was struck on the head by a piece of coal falling from the loading chute at the mine and suffered concussion of the brain. Although he lived about two years after the accident the finding was that the injuries received from the falling coal resulted in his death.

The Winslow Mining Co., Huntington, has filed notice showing an increase in its capital stock from $10,000 to $40,000.

KENTUCKY

The Coal Bureau, of the Louisville Board of Trade, held its April dinner at the Louisville Old Inn Hotel on April 2. Bob Watson was toastmaster. Talks were heard from W. B. Gathright, of the St. Bernard Coal Mining Co., Charles Cush, Atlas Coal Co., Charles O'Connor, Pittsburgh Fuel Co., T. J. Morrow, Byrne & Speed Coal Co., and others. Views expressed were fairly optimistic, belief being that reduced prices arranged for April would be raised in May, and that there would be fair summer stocking.

Elkhorn Collieries Co., which has been operating a coal mine on Elkhorn Creek, has sold its entire interest to **J. H. Bentley & Son,** of Jenkins, for $20,000.

Among charter changes recently filed and new charters granted as announced by the Secretary of State are as follows: **Delaware Coal Co.,** Delaware, increasing capital from $15,000 to $30,000. **Clayborn-Elkhorn Coal Co.,** Paintsville, $120,000, E. M. Clay, E. M. Brown and W. C. Howes. **Castleman Brothers,** Louisville, changing name to **Bell-Harlan Coal Co. United Block Coal Co.,** Auxier, $100,000, J. C. Snyder, O. S. Massengill and William White.

The Imperial Elkhorn Coal Co. at Sergent will start at once making extensions and improvements in its plant. Additional coal lands will be opened for development by the construction of a short spur of railroad. Several new mines will be opened. A new tipple will be constructed.

Jacob L. Frankel, of New York City, sold 2,121 acres of coal land in Webster and Union counties to the **Webster & Union Coal Co.** for $127,000.

The Scanlon Coal Co., Louisville, one of the older and larger retail organizations, has passed into new control, T. V. Brown, J. C. Hanna and C. O. Brown having purchased controlling interest in the organization.

MINNESOTA

The Superior Coal & Dock Co., at Duluth, is about ready to let a contract for improving its dock. Plans for building new foundations, wrecking the old bridges and erecting a modern electric bridge are contemplated.

MISSOURI

The Raven Coal Co., six miles west of Glenwood, will run a transmission line to Glenwood, Lancaster and Downing and will supply those towns with electric current, which it can furnish to the three towns cheaper than Lancaster can provide from its own plant.

OHIO

John L. Lawler & Son, owner of four mines at Clarion, is making extensive improvement at mine No. 7. Complete electrical equipment is being installed, which includes a new power plant and drainage system. In all about $40,000 will be expended in the improvement which will be completed early in May. The electrical system includes both a collection and haulage system.

The announcement is made by **Assistant U. S. District Attorney Ford** that no Ohio coal men will be prosecuted before the coming Federal grand jury. After collecting a mass of data, which was to have been presented to the grand jury, the decision of the U. S. Supreme Court, declaring certain sections of the Lever law unconstitutional, will forestall prosecutions if any were warranted.

The Aden Valley Coal Co. has been chartered with a capital of $60,000 to mine coal in the Cambridge field. The incorporators are: W. A. Limbacker, H. E. Bickel, F. M. Hall, George W. Cassingham and W. L. Hart.

The Commercial Coal & Coke Co. has been incorporated with a capital of $25,000 to mine and sell coal. Incorporators are: O. Ruby, F. L. Leckie, Tracy H. Duncan, T. C. Robinson and Joseph A. Schultz.

The Elk Coal & Coke Co. has been chartered with a capital of $500,000 to mine and sell coal. It is announced that the company will handle and operate coal properties both in Ohio and West Virginia. The incorporators are: C. H. Bancroft, H. H. Pleasant, A. L. Wiswell, C. J. Mayer and L. S. Van Guns.

PENNSYLVANIA

The Navy Smokeless Coal Mining Co. of Ebensburg has elected the following board of directors: T. Stanton Davis, Ebensburg, John H. Cooney, Johnstown, F. B. Custer, Conemaugh, W. C. Shiffler, Ebensburg, Herman Widmann, Johnstown, I. E. Lewis, Ebensburg, William Barron, Johnstown, Ambrose Schettig, William C. Krug, H. J. VanDusen, Dr. Harry J. Bennett, Walter F. Jones and H. F. Dorr all of Ebensburg, Alfred Wildmann, Johnstown and Harry Davis, Conemaugh. W. C. Shiffler was elected secretary-treasurer, Richard Bland was re-elected superintendent and Charles Hauth mining engineer. The company is operating to capacity each day, employing 100 men. A number of new houses are planned this summer.

The H. C. Frick Coke Co., at the Alice mine on the Monongahela River, in Fayette County, has begun the construction of a large steel river tipple, preparatory to the installation of a five-mile underground conveyor system to bring the coal from several inland mines, now connected, to that point for river shipment instead of shipping by rail as is now being done.

The Diamond Coal & Coke Co., a subsidiary of the **Hillman Coal & Coke Co.,** of Pittsburgh, has begun sinking a large new shaft at Warwick, on the Monongahela River in Greene County, preparatory to developing a large tract of coal at that point. This mine will ship by river exclusively.

The Somerset Creek Coal Co., at Hooversville, Somerset County, expects to open operations June 1. This company has installed new machines for digging coal. Five new seven-room houses have just been completed and a contract for five more has been awarded.

UTAH

Schedules for tax valuations have been sent to the state board of equalization by the **Peerless Coal Co.** of Salt Lake City with properties in Carbon County, showing values at $133,189.52.

Mine rescue work is making great strides. Plans are under way to build a **first aid station** in the Spring Canyon district, the first station of its kind to be erected in the state. The move is being supported by all the companies operating there. The station is to be conducted along similar lines to the fire department of a large city, and it is hoped that any point in the district will be reached, when necessary, in twenty minutes.

WEST VIRGINIA

Business will be continued by a few companies operating under West Virginia charters following action taken by their stockholders, the following companies having given up their corporate existence: **Guyan Valley Coal Co.**, of Huntington; **Superior Thacker Coal & Coke Co.**, of Williamson; **R. G. Bailey Coal Co.**, of Williamson.

Organization of the **Tipple Ann Coal Co.**, of Morgantown, will be followed by the development of coal territory in Monongalia County on quite an extensive scale. This concern has a total capital stock of $100,000. Chiefly interested are: Asa M. Sterling and H. M. Conn, of Dilliner, Pa.; Robert H. Chrisman, H. M. VanVoorhis, Helen M. VanVoorhis, all of Morgantown.

A tract of 1,100 acres in the Coal River field, tapped by the C. & O., will be developed by **John L. Cochran**, of Denver, in association with others. Development work will be undertaken in the near future.

It is understood that development work will be pushed by the **Cameva Coal Co.** on its new plant at Maxine in the Boone County field by J. W. Vandergrift and others. This company will operate in the No. 2 Gas and Winifrede seams.

New electrical equipment is being installed by the **New River & Pocahontas Consolidated Coal Co.** on an extensive scale at its plant at Berwind. Such new equipment consists of the construction of a new substation and the installation of a new turbine and generators.

Production will be increased by the **Pera Coal Co.** through the driving of a new opening, work on which has already been started. Further provision is being made for handling more coal by the installation of additional siding.

Additional electrical and other equipment is being installed at the plant of the **Maxine Coal Co.** at Maxine. New mine cars have been received and a new 200-kw. generator set is being installed.

Preparations are being made by the Zinn-Richardson Coal Co. to develop coal lands in Preston County near Masontown, this corporation having just been organized with a capital stock of $25,000. Active in launching this concern were: **Will S.** Zinn, Masontown; W. M. Melton, Bretz; Ralph Richardson, H. H. Richardson, Reedsville; W. W. Mayfield, Morgantown, W. Va.

A deal has been closed by the **Mountaineer Coal Co.**, of Charleston, for the purchase of the mine and equipment of the **Blue Band Coal Co.**, in the Kanawha region. C. Counts, of Charleston, is the president of the Mountaineer Fuel Co.

At a time when there is little market for coal and when it is possible to make improvements and betterments, the **Delmar Coal Co.** is making plans to install a new conveyor system at its mines at Hildebrand in Monongalia County. This is one of the companies in which C. D. Robinson, of Fairmont, is largely interested.

The Huntington office of the **Old Dominion Coal Corporation** has been consolidated with the Charleston office of the same company and business formerly passing through the first-named branch office will hereafter be handled through Charleston. C. P. Christian, who has been in charge of the branch office, has been transferred to Charleston.

Huntington people have launched the **Superior Elkhorn Byproduct Coal Co.**, with headquarters at Huntington. This company has a capital stock of $100,000. Principally interested in the new concern are: J. W. Lawton, J. F. Ratcliff, H. B. Hagen, W. O. Wyatt and S. S. McNeer, all of Huntington.

The Acme Coal Auger Co. is a new Fairmont concern in which well-known coal men of northern West Virginia are largely interested, as follows: J. A. Clark, Jr., of the Clark interests; G. B. Hartley, H. G. Greer, Paul G. Armstrong, C. E. Bell, E. S McCullough, T. L. Burchinal, all of Fairmont; Everhart Bierer, of Morgantown; Daniel Howard, of Clarksburg.

A preliminary organization of the **Eldon Coal Mining Co.** was perfected the latter part of March, the new company being capitalized at $100,000. Headquarters will be at Wheeling, the concern expecting to operate in that vicinity. Among those largely interested in this concern are: R. J. Cotts, Ed. Burkhart, Thomas I. Thomas, all of Wheeling; R. L. Dowell, of Glendale, and Charles Abrams, of McMechen, W. Va.

Official information has been received as to the future plans of the **Parkersburg Dry Dock Transportation & Coal Co.**, which is evidently to become the river subsidiary of the **Ben Franklin Coal Co., of West Virginia**, the latter company owning about 3,000 acres of coal land in Marshall County. The new company, however, has taken over all the river equipment of the Ben Franklin company and will handle coal for delivery between Moundsville and Parkersburg.

Purchase by the **East Wheeling Coal Co.**, of more than 200 acres of coal land in Liberty district of Ohio County on Short Creek in the interior of Ohio County is the forerunner of development work.

The construction of a railroad up Glade Creek in Raleigh and Summers counties will make possible the development of additional car territory. **The Georges Creek Coal Co.** has secured from Harry E. Weber over 3,000 acres of coal land on Glade Creek, the sum involved in such a purchase being $105,137.

The Guyan Coal Co. will handle the output of coal companies in the Kanawha and adjacent regions, this concern having opened offices in Charleston. L. H. Hundley is the president of the company, C. H. Brown being secretary and treasurer.

In the period of dullness, during which mines cannot be operated to any great extent, the **Carter Coal Co.**, which has a plant at Coalwood, is completely renewing its shaft and tipple equipment at what is known as the Olga shaft. The tipple is being rebuilt. The company is also putting in a concrete bottom in the shaft and renewing machinery in the mine.

A tramway has long been in use by the **Bradshaw Coal Co.** at its operations at Bradshaw in transporting coal from the mine to the tipple, but the company is discontinuing this and is installing an aërial rope tramway.

The growth of the mining industry in the state has made necessary another increase in the inspection force of the Department of Mines. This is being provided for in Senate Bill No. 197 introduced by Senator York of Mingo County, calling for a total of 22 inspectors. It has only been two years since the number of inspectors was increased from 16 to 19. If the pending bill should become a law it would mean that it has been found necessary to increase the force from 15 to 22 inspectors within a period of four years.

NOVA SCOTIA

The output of the mines of the **Dominion Coal Co.** for the month of March was 196,614 tons, showing some decrease compared with the output of the previous month, which was 227,030. The output for the month of March of last year was 245,437 tons.

Resumption of delivery of 1,000 tons per week to the Canadian National Rys. will enable the **Ineverness collieries** to reopen mine operations until navigation commences, when trade conditions are expected to improve. The Federal government is being urged to put the Canadian Government Merchant Marine into use as coal carriers between Nova Scotia and Quebec.

Traffic News

In the complaint of the **Chicago Springfield Coal Co.** an I. C. C. examiner recommends that the rate on bituminous pea coal from Springfield to Dixon, Ill., is unreasonable.

In the complaint of the **Consolidation Coal Co.** the Commission decides that the Millers Creek R.R. is a common carrier subject to the Interstate Commerce act and that rates on coal from points on that road resulting from cancellation by the C. & O. of the absorption of switching charges of the Millers Creek road is unreasonable to the extent that they exceed the rates applicable from Group 5 district of the C. & O.

The I. C. C. has authorized the Illinois Coal Traffic Bureau to intervene in the case of the **C. N. Dietz Lumber Co.**, involving rates on soft coal from points in Colorado, Illinois, Pennsylvania, West Virginia and Wyoming to destinations in Iowa, Wyoming and Nebraska.

The Mathieson Alkali Work, of Saltville, Va., in a complaint to the commission, attacks unreasonable rates on coal from Clinchfield and Trammel, Va., and from Calhoun Falls Branch and Heysl, Va., and Elkhorn City, Ky., and from Raven, Va., and Stone, Ky., from Chatteroy and Nolan, W. Va., to Marion, and Saltville, Va.

The I. C. C. has authorized the **Southern Ohio Coal Exchange** to intervene in the case of the **Michigan Manufacturers' Association**, involving rates on coal from points in Ohio, Pennsylvania, Maryland, Virginia, West Virginia, Kentucky and Tennessee to points in the lower peninsula of Michigan.

The commission has denied the application of railroads to continue rates on coal from **Oklahoma mines to Lubbock, Texas**, without observing the long and short haul clause.

The commission has assigned the complaint of the **Green Rock Coal Co.** for hearing at St. Louis April 16.

In a complaint to the I. C. C. the **Melcroft Coal Co.** of Pittsburgh attacks as unreasonable the rates on coal from Melcroft to Jersey City.

The Indiana Board & Filler Co., of Decatur, Ind., alleges unreasonable rates on bituminous coal from the Oliphant Johnson Coal Co's mine on the P. C. C. & St. L. in Indiana and from Wheatland to Vincennes, Ind.

The Northern West Virginia Coal Operators' Association alleges that the Pittsburgh & Lake Erie R.R. fails to accord mines on the Monongahela Ry. and the Morgantown & Wheeling Ry. the same coal car supply on the average as is accorded on the average to mines on the Pennsylvania Central region and the P. and L. E.

The Lackawanna Steel Co., of New York, alleges unreasonable rates on coal from mines in Pennsylvania, Ohio and West Virginia to points in New York.

Personals

D. F. Hurd, secretary of the Pittsburgh Vein Operators' Association. Cleveland, was in Washington recently, attending the meeting of Railroad Relations Committee, National Coal Association, and also a meeting of various association secretaries.

Michael Gallagher, general manager of the Wheeling & Lake Erie Coal Mining Co., and other M. A. Hanna & Co. properties, has returned from a short visit to Washington.

Charles E. Maurer, who has been spending the winter in Florida, is now sojourning for a brief period in Hot Springs, Va., before returning to Cleveland. Mr. Maurer formerly operated coal properties in the eastern Ohio field.

J. W. Porter, who has been manager of sales for the Alabama Co. for several years past, has been promoted to a vice-presidency in the corporation. Mr. Porter is an adept in the sales end of the game and one of the best informed men in the district on pig iron, coal and coke markets. He will still retain general supervision over sales.

A group of Washington men—**William F. Thyson, Charles H. St. John, W. B. Phillips, Paul Dulaney, Wilbur La Roe, Jr., Charles C. Carlin, Thomas Ruffin, and Walter M. Ballard**—have organized a coal company in the Capital City, the Consumers Co., Inc., with $100,000 capital stock, having purchased the properties of the Phillips & Lynch Coal Co.

William McKell, head of the McKell Coal & Coke Co., was a visitor in Charleston for a day or so recently.

H. C. Owen, of the Morgantown Coal Co., with headquarters at Morgantown, W. Va., was in Pennsylvania recently, making an investigation of coal lands in that state.

J. H. Moran, of the Fort Dearborn Coal Co., Chicago, and formerly with the Ender Coal & Coke Co., Chicago, has resigned and is now with the newly formed coal company, the Central States Coal Co.

C. C. Potts, of Chicago, has been made superintendent of the new rescreening plant built at Mt. Vernon, by the Southern Gem Coal Co., of Chicago. The company has a large number of mines in the southern part of Illinois and practically the whole output of the mines is handled through the Mt. Vernon plant.

A. E. Lee, formerly with the Reliable Coal Mining Co., as vice-president and also at one time general freight agent for the Chicago & Alton, has been made general sales manager for the Union Fuel Co. of Chicago.

Harry F. King, secretary of the Buffalo Bituminous Coal Association, has taken a responsible position in the Tuttle Corporation, coal shippers and exporters of New York.

C. F. Reed, secretary of the Western Kentucky Coal Bureau, was in Washington, on April 5, for the meeting of the National Coal Association's Railroad Relations Committee, as representive of the Kentucky operators.

The resignation of **Howard C. Matlack** as vice-president of the Matlack Coal & Iron Corp., New York City, was accepted April 9. **W. E. Wallace**, manager of operations and assistant treasurer, was elected in his place. **J. P. Routh** was appointed assistant secretary.

Announcement is made of the appointment of **Harrison G. Ecker**, as manager of export and bunker sales for the Tuttle Corporation, New York City.

C. J. Neekamp has been appointed secretary of the Northeast Kentucky Coal Association, effective April 11. **F. E. Durham**, acting secretary, has been retained as statistician.

A. F. Kemps, formerly assistant manager of sales for W. J. Rainey, Inc., is now connected with the Eastern Fuel Co., New York City, in the capacity of eastern sales manager, in charge of line business. **J. W. Riefkin**, New York manager, will continue in charge of Tidewater business.

Viscount T. Inouye, of Japan, director of the Fushun Coal Mines of Manchuria, is in this country, and it is understood that he plans a conference with Judge Gary of the Steel Corporation.

Prof. Zimmerman, of Milliken University, has been engaged by the Bureau of Mines to investigate Northwestern fuel to determine whether carbonized lignite can find a market in that territory.

Charles S. Keith, of Kansas City, president of the Central Coal & Coke Co., has been appointed by the U. S. Chamber of Commerce as a member of a committee to study the forestry situation.

T. H. Huddy, general manager of the Williamson Coal & Coke Co., was in Charleston, W. Va., recently.

A recent visitor in the Pittsburgh market was **George Rodgers**, of the Mon-Scott Fuel Co., with headquarters at Morgantown.

After spending a few days in Eastern markets, **S. F. Elkins**, of the Elkins Fuel Co., has returned to his office at Morgantown.

The Southern Fuel Co., of Morgantown, was represented at Detroit during the last few days of March by **R. R. McFall.**

O. W. Gardner, of Lynchburg, Va., was a visitor at Huntington recently. Mr. Gardner is president of the Chesapeake & Virginian Coal Co.

C. M. Roehrig, formerly secretary of the Northeast Kentucky Operators' Association and now Huntington district manager of the Tuttle Corporation and of the Tuttle Coal Co., was a visitor in the Kanawha field recently.

A. B. Beisel, general manager of the Island Creek Coal Co., with headquarters at Huntington and Holden, spent a day or so in Charleston recently on business.

A. B. Rawn, of Huntington, general manager of the Solvay Collieries Co., was a visitor in the Kanawha field during the last week of March.

Colonel T. E. Houston, of Cincinnati, identified with many operations on the N. & W., was a visitor in Charleston, W. Va., during the latter part of last month.

E. E. White, president of the E. E. White Coal Co., has gone to his old home at Mt. Carmel, Pa., after spending a few days at his headquarters at Glen White, W. Va.

Harry Olmstead, chairman of the Labor Committee of the Williamson Operators' Association, was a visitor in West Virginia's capital city recently.

John Hart, of Charleston, president of the Hartland Collieries Co., was a visitor in New York recently.

A visitor in Ohio and Michigan markets was **George H. Ewald**, president of the Standard Tide & Inland Coal Sales Co., recently organized.

Paul K. Morris, of Uniontown, Pa., associated with the Bingamon Gas Coal Co. of that city, was a visitor in Fairmont, W. Va., late in March.

Harry Whyel, well known in Uniontown, Pa., coal circles, after spending a few days in Marion County, recently left for a trip to Florida.

W. E. Koepler, secretary of the Pocahontas Operators' Association, with headquarters at Bluefield, was a visitor at West Virginia's capital in March.

Louis J. Wolfberg, of New York and Chicago, has been elected vice-president and general sales manager of the Lake & Export Coal Corporation of Huntington as the first move on the part of the above-named company to expand its operations and to internationalize its organization with a view to securing more foreign trade.

Association Activities

Michigan-Ohio-Indiana Coal Association

The claim bureau of the association during the past four months has collected claims for its members against railroad companies amounting to approximately $96,000. This is a record according to B. F. Nigh, secretary, who has direct charge of the claim bureau. During the same period approximately 50 new members were received in the association.

The annual convention of the organization will likely be held at Cedar Point, Ohio, some time in June. The coming convention is expected to be one of the most important in its history.

Norfolk Coal Exchange

F. L. Stewart, president of the Stewart Coal Co., has been elected president of the exchange, composed of retail coal dealers. Other officers are: Aaron Levine, City Coal & Ice Co., vice-president; W. E. Hudgins, Hudgins Fuel Co., secretary and treasurer; John Stribling, Stribling Fuel Co., sergeant-at-arms.

Northern West Virginia Operators' Association

In securing a decision from the I. C. C. in connection with the claim made of discrimination on the part of the Pennsylvania and the Pittsburgh & Lake Erie in the distribution of cars to mines on the Monongahela and the Morgantown & Wheeling railways, the association has placed its members in a position to obtain redress for damages, and it is said that such damages will amount to the profit on 15,000 empty cars not furnished but to which the mines on the roads named were entitled. The decision of the commission is regarded as important inasmuch as it makes plain that members of associations will be entitled to damages when discriminated against in the distribution of cars. The decision of the commission also makes it mandatory upon the Pennsylvania and the Pittsburgh & Lake Erie to put the mines on the Monongahela and the Morgantown & Wheeling on an equality with mines on their own lines in the distribution of cars. It is thought that this decision will have an important bearing on the case now before the commission for an equalization of the car supply which the Pittsburgh & Lake Erie and the Pennsylvania failed to furnish between March 1, 1920, and Jan. 1, 1921.

Winding Gulf Operators' Association

Figures have been compiled by the association, giving a comparison of production in the various smokeless regions of West Virginia for the year 1920, it being shown for instance that the four smokeless fields produced a total of 32,370,335 tons. Production was largest in the Pocahontas field, aggregating 15,421,288 tons. The New River district came second having a production of 7,065,225 tons. In third place was the Winding Gulf region, with a total output for the year of 5,810,157 tons. Tug River production aggregated 4,073,665 tons.

Industrial News

Boston, Mass.—The Massachusetts Fuel Administration announces a change of headquarters from Exchange Street to Room 481, State House. Eugene Hultman, Fuel Administrator, and Edward F. O'Dowd, statistician.

Boston, Mass.—Ranger & Worden will conduct a business, handling anthracite and bituminous coals. Lynn M. Ranger is in charge of the Boston office, 141 Milk St., and Charles O. Worden will be at the branch office in Scranton, Pa.

Chicago, Ill.—The Grindle Fuel Equipment Co. hereafter will be the name of the Powdered Coal Co., formerly known as Combustion Economy Corporation. The company will manufacture powdered coal equipment.

Cleveland, Ohio—The Cleveland & Western Coal Co., operating in eastern Ohio, has removed its general office from the Leader-News Bldg. to the new Hanna Building on the thirteenth floor.

New York, N. Y.—Announcement is made of the removal of the Atlas Fuel Corporation to its new office, located at 808 National City Bldg., 17 E. 42nd St., effective April 20. Telephone Murray Hill 9960-1.

New York, N. Y.—The New England Coal & Coke Co., and the New England Fuel & Transportation Co., will move late in April from their present quarters in the Whitehall Bldg. to the fifth floor of the Cunard Bldg.

New York, N. Y.—The G. E. Engineering Co., Inc., has moved to 449 West 42nd St., Phones: Longacre 2022-3. Mechanical and electrical installations.

Philadelphia, Pa.—The Atlantic Coal & Iron Co., announces the removal of its offices from 418-22 Real Estate Trust Building to 1506-7 Land Title Building.

Pittsburgh, Pa.—The Pittsburgh Mining Machinery Co., has changed offices from the First National Bank Bldg., to the Wabash Bldg., 410 Liberty Ave.

Publications Received

Analyses of Iowa Coals.—Bureau of Mines, Technical Paper 269; Pp. 27; 6 x 9 in.

Regulation of Explosives in the United States—Bureau of Mines, Bulletin 198. Pp. 45. Giving especial reference to the administration of the Explosives Act of Oct. 6, 1917.

The Analysis of Sulphur Forms in Coal—Bureau of Mines, Technical Paper 254. Describing and elaborating the method for the determination of the various form of sulphur in coal.

Gas Purification in the Medium-Size Gas Plants of Illinois—Bulletin 25, Co-Operative Mining Series, State of Illinois Department of Registration and Education, Division of the State Geological Survey. Pp. 71, charts and tables.

Chlorination of Natural Gas—Department of the Interior, Bureau of Mines, Technical Paper 255. Pp. 44; charts and tables.

Coming Meetings

Indiana Retail Coal Merchants Association will hold its convention at Indianapolis, Ind., May 4, 5 and 6. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Society of Civil Engineers will meet at Houston, Tex., on April 27 to 30. Acting Secretary, H. S. Crocker, 33 West 39th St., New York City.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olson, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf-Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 2 and returning on June 4. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The Kentucky Retail Coal Dealers' Association will hold its annual meeting at Lexington, Ky., Phoenix Hotel, April 27. Secretary J. Crow Taylor.